
**Task Order No. 8:
Remedial Investigation Report for Military
Ocean Terminal Bayonne (MOTBY)
New Jersey**

FINAL DRAFT

Prepared for:

Commander, U.S. Army Toxic and
Hazardous Materials Agency
Aberdeen Proving Ground, Maryland 21010
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EXECUTIVE SUMMARY

This report presents the results of the Remedial Investigation (RI) conducted for eight sites at the Military Ocean Terminal Bayonne (MOTBY), New Jersey. The purpose of the RI was to investigate the nature and extent of surface and subsurface contamination attributable to past on-post operations involving hazardous wastes, to assess the potential threat to human health or the environment, and to provide data for subsequent Feasibility Studies (FS) or remedial actions, if deemed necessary.

The scope of work and technical approach for conducting the RI were developed as a Technical Work Plan and approved by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) and the New Jersey Department of Environmental Protection prior to initiation of the field program. The RI program consisted of historical aerial photographic interpretation; geophysical survey of a landfill; drilling of boreholes and installation of monitoring wells; physical soil testing; assessment of site hydrogeology; aquifer characterization (slug testing and water level monitoring); collection and analysis of groundwater, surface water, soil, and sediment samples; underground storage tank inspection and sampling; and performance of contamination and public health and environmental assessments for the eight sites. Data collected during the 1988 field program were integrated with relevant information from previous studies conducted at MOTBY to provide a basis for site evaluation.

The manmade character of the MOTBY peninsula is significant with respect to the hydrogeology of the area. The terminal extends into the Upper New York Bay for approximately 1.8 miles with no natural soil or bedrock exposed at the surface, except at the westernmost edge bordering the City of Bayonne. The peninsula was constructed of hydraulic sand fill dredged from the Upper New York Bay, with construction fill used for stabilization. Groundwater and surface water flow directly into the North and South Channels of the bay, with significant tidal influence on groundwater beneath the eastern portion of the peninsula.

Because MOTBY is isolated from the surrounding communities, there are no potential users of groundwater or surface water that may be impacted by conditions at MOTBY.

The results of the site investigations indicate that groundwater contaminants are present at the landfill, and organic contaminants are associated with soils at several sites. For all sites, no potential pathway for exposure has been identified, there are no identified potential receptors, and/or the constituents or concentrations are such that the associated calculated risk (according to U.S. Environmental Protection Agency (USEPA) requirements) is considered acceptable.

Based on results of evaluations at the eight sites, it is recommended that no further action be taken on six sites (Sites 1, 2, 4, 5, 6, and 8), additional investigation or remediation be undertaken for the 12 abandoned underground storage tanks at Site 3, and remedial action be implemented for Site 7. Since remedial action recommended for a drum storage area (Site 7) involves only the scraping and removal of surface soil, the conduct of an FS prior to remediation at the site does not appear to be warranted.

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ACRONYMS/ABBREVIATIONS

AA	Atomic absorption
AES	Atomic emission spectroscopy
ASTM	American Society for Testing and Materials
BOQ	Bachelors Officers Quarters
BNA	Base-neutral/acid extractable organic compound
°C	Degree Celsius
cm/sec	Centimeter per second
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRL	Certified reporting limit
DDT	Dichlorodiphenyltrichloroethane
DRMO	Defense Reutilization Marketing Office
EP	Extraction potential
ERTEC	Earth Technology Corporation
°F	Degree Fahrenheit
FAWQC	Federal ambient water quality criteria
FS	Feasibility Study
FTA	Fire Training Area
FWS	Fresh water standard
GC/MS	Gas chromatography/mass spectroscopy
ICP	Inductively coupled plasma
in.	Inch
IRIS	Integrated Risk Information System
kg/hr	Kilogram per hour
kg/m ³	Kilogram per cubic meter
MCL	Maximum contaminant level (Federal)
MCLG	Maximum contaminant level goal (Federal)
mg/kg	Milligram per kilogram
ml	Milliliter
MOTBY	Military Ocean Terminal Bayonne
MSL	Mean sea level
NAVFAC	Naval Facilities Engineering Command
NGVD	National Geodetic Vertical Datum
NJAWQC	New Jersey ambient water quality criteria

ACRONYMS/ABBREVIATIONS (cont'd)

NPDWR	National Primary Drinking Water Regulation
NJGS	New Jersey groundwater standard
NYDEP	New York Department of Environmental Protection
O&G	Oil and grease
PCB	Polychlorinated biphenyl
PHRED	Public health evaluation database
ppm	Parts per million
PP	Priority pollutant
PVC	Polyvinyl chloride
QA	Quality assurance
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SMCL	Secondary maximum contaminant level (Federal)
SWS	Salt water standard
TCL	Target compound list
TPHC	Total petroleum hydrocarbon
ug/g	Microgram per gram
ug/kg	Microgram per kilogram
ug/l	Microgram per liter
URL	Upper reporting limit
USAEHA	U.S. Army Environmental Hygiene Agency
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USOC	U.S. Department of Commerce
USGS	U.S. Geological Survey
USEPA	U.S. Environmental Protection Agency
UST	Underground storage tank
VOC	Volatile organic compound
yr	Year

1.0 INTRODUCTION

This Remedial Investigation Report is submitted in partial fulfillment of the requirements of Task Order No. 08--Remedial Investigation (RI) at the Military Ocean Terminal Bayonne (MOTBY), New Jersey. It was prepared by Dames & Moore for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) in accordance with the requirements of Contract No. DAAA-15-85-D-0016.

This report presents the results of the RI described in the RI Technical Plan submitted by Dames & Moore under the above-referenced contract on September 9, 1988 (USATHAMA, 1988). The RI Technical Plan was designed with the overall objectives of:

- Investigating the extent of surface and/or subsurface contamination potentially attributable to past on-post operations involving hazardous wastes.
- Providing data to plan subsequent remedial measures design and implementation phases, if necessary.

The overall objective of the RI at MOTBY is to evaluate whether toxic or hazardous contaminants are present and are, or have the potential of, migrating beyond the boundaries of the installation by surface and/or subsurface routes. The contamination assessment considers data collected by Dames & Moore as part of the RI, as well as limited site-specific data available from previous investigations. New and previously existing data were integrated during this investigation, resulting in a comprehensive hydrogeologic evaluation and contamination assessment. Following submittal and approval of the RI report, Feasibility Study (FS) planning activities will be initiated, if deemed necessary.

1.1 PURPOSE OF STUDY

The purposes of Dames & Moore's investigation at MOTBY was to obtain data to evaluate the nature and extent of hazardous constituents in area surface water, groundwater, soil, and sediment and to determine the need for corrective action measures. The contamination assessment considers the types and quantities of contaminants at and around each site of concern and the transport mechanisms that allow the migration of contaminants from the sites.

Based on the information collected during an installation assessment to determine whether toxic and hazardous materials and related contamination are present as a result of past activities at the terminal, and the information collected during site visits, eight areas of potential contamination at MOTBY were identified. The eight sites of concern identified in the Technical Plan and addressed in this report include:

- Site 1, Landfill
- Site 2, Former Naval Storage Area
- Site 3, Underground Storage Tanks
- Site 4, DRMO Drum Storage Area
- Site 5, Battery Acid Pit
- Site 6, PCB Spill Area
- Site 7, Building 105 Drum Storage Area
- Site 8, Fire Training Area.

Brief descriptions of these sites are provided in Section 2.0. (The sites are identified in Figure 2-2). Site 3 consists of several abandoned underground storage tanks, as discussed in Section 2.4. The sites were identified during the Installation Assessment conducted by USATHAMA (USATHAMA, 1982), identified by installation personnel based on knowledge of past practices, or identified based on a records review and evaluation of documents available from MOTBY and USATHAMA.

Site-specific hydrogeology was further defined through implementation of a field program that included boring/monitoring well installation. Geotechnical and chemical results of data collected during the field program have been used in conjunction with existing data to identify the presence, approximate extent, and migration potential of contaminants from each of the above sites.

The specific objectives of the RI at MOTBY were to:

- Characterize and quantify contamination in groundwater, soils, surface water, and sediment at each of the sites.
- Better define the geology and hydrology in the vicinity of the sites, with emphasis on contaminant transport.

- Assess the risks that contaminants attributable to the site(s) may pose to human health or the environment.
- Characterize and quantify contamination and assess the risks associated with contaminant migration beyond the boundaries of the installation.

1.2 SCOPE OF WORK

Development of the RI technical program was based on a review and evaluation of pertinent existing data. The data derived from the technical program implemented by Dames & Moore in the winter-summer of 1987-1988 allow for better definition of site hydrogeology, identification and location of potential contaminant sources, and determination of contaminant extent and potential for migration off post, as evaluated during the contamination assessment and discussed in Section 5.0.

The RI program conducted by Dames & Moore and discussed herein consisted of field, laboratory, and office tasks. The tasks were grouped into five major project components, which are briefly summarized below:

- Technical Plan Development--A Technical Plan for conducting the RI for MOTBY was prepared to identify sites for evaluation; to define field data collection efforts, specific sampling strategies, methodologies, and appropriate procedures; to outline the analytical program with associated quality assurance/quality control (QA/QC); and to present the approach to be used in the data evaluation and contamination assessment.
- Prefield Activities--Numerous tasks were completed to properly coordinate and prepare for the field investigations, well installation, and field testing activities. These included reviewing existing water quality data, water level data, and other hydrogeologic information used in optimizing the locations of wells to be constructed; performing records review of documents obtained from MOTBY and USATHAMA; procuring required equipment and support services; and implementing data management, and health and safety programs.
- Field Investigations and Laboratory Analysis--The primary tasks included exploratory drilling; installation of monitoring wells; a

geophysical survey; sampling and analysis of surface water, ground-water, soils, and sediment; and other necessary activities to characterize surface and subsurface conditions. All work was performed in accordance with the USATHAMA-approved procedures for well installation, sampling and analysis, QA/QC, and health and safety. The 1988 RI field program for MOTBY specifically included:

- Reviewing a historical aerial photography investigation performed by EPA for MOTBY.
- Performing a geophysical survey (magnetometer) of the landfill area.
- Drilling 11 shallow borings located around Sites 1 and 2 (Landfill and Formal Naval Storage Area, respectively).
- Drilling four deep borings located around Sites 1 and 2.
- Installing and developing monitoring wells in nine of the shallow and in four of the deep boreholes and measuring ambient water levels.
- Collecting a total of 13 samples of groundwater, five of surface water, five of sediment, and 31 of near-surface soils for chemical analysis.
- Conducting an inventory of 12 abandoned underground storage tanks and determining the volumes of existing contents.
- Sampling the 10 abandoned underground storage tanks that were not empty.
- Performing chemical analysis on a total of 53 environmental and storage tank samples collected as well as additional QC samples.
- Aquifer (slug) testing of four of the newly installed wells.
- Collecting groundwater elevation data from newly installed wells to assess site hydrogeology.
- Physical testing of one soil sample.

- Data Analysis and Interpretation--Data collected during the field investigations and laboratory analysis were reviewed and evaluated. As new information became available, it was integrated with the existing data and used to refine the understanding of the geology and hydrology of the sites and surrounding areas. Groundwater flow direction, groundwater recharge and discharge areas, and the horizontal and vertical extent of surface and subsurface chemical constituents at or near each of the sites were evaluated. This information was combined with data on potential receptors to obtain an indication of associated risk.
- Reporting--This RI report was prepared after data evaluation. It describes the results of the work performed during implementation of the Technical Plan and includes supporting data. The report integrates data collected during the RI field program and previous pertinent available data.

1.3 PREVIOUS INVESTIGATIONS AND RESPONSE ACTIONS

Only limited investigative work occurred at MOTBY prior to this RI to evaluate site-specific environmental conditions, identify potential contamination sources, and assess potential site-specific contamination problems. An initial Installation Assessment of MOTBY was conducted by USATHAMA in 1982 (USATHAMA, 1982). This assessment identified potential contamination sources for followup investigation. The water and sediment at the spring and water within the storm sewer east of the landfill (Site 1) were sampled once prior to this RI (USAEHA, 1984). Results of this effort are provided in Section 5.0. A total of eight monitoring wells were previously installed at MOTBY. These wells were installed to investigate potential subsurface contamination related to several underground fuel storage tanks currently in operation (ERTEC, 1986).

1.4 REPORT ORGANIZATION

This report was prepared following evaluation of all field and laboratory data and includes supporting data. Sections 2.0 and 3.0 provide background information on installation history, site physical description, and environmental setting. Sections 4.0 and 5.0 present the field and laboratory program, resulting data, and evaluation of the data. Section 6.0 presents public health and environmental

concerns, and Section 7.0 provides conclusions and recommendations. General references and those specifically cited in the report are included in the Bibliography. Appendices A through E include data collected during completion of the RI, including boring logs and well construction diagrams, physical testing soil data, slug test and tidal fluctuation results, chemical/analytical data, and tank inspection report forms.

2.0 INSTALLATION DESCRIPTION

2.1 LOCATION

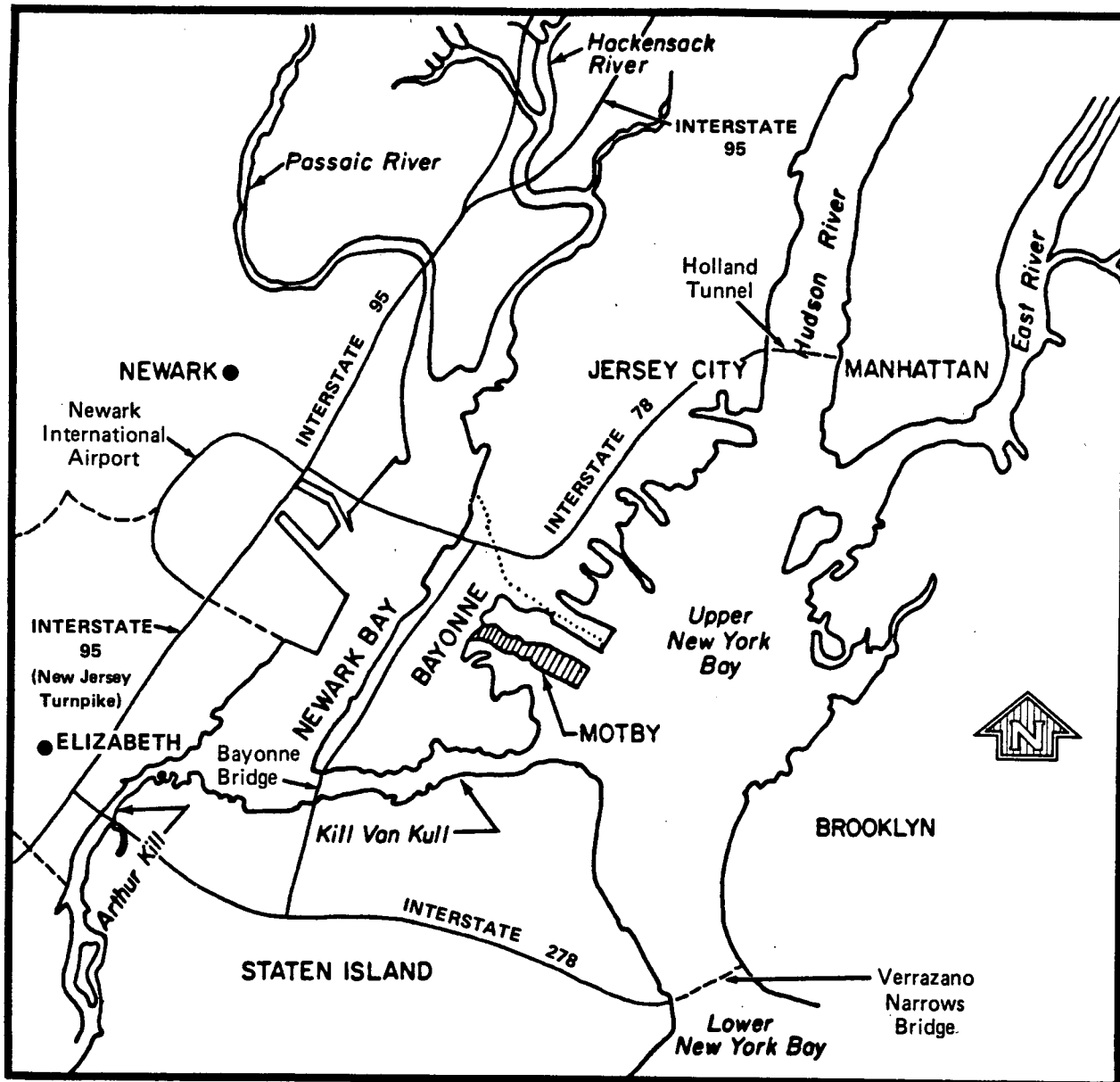
MOTBY is located on a manmade peninsula of approximately 679 acres, including land and water adjacent to the City of Bayonne in northeastern New Jersey. The peninsula, located in southern Hudson County, extends eastward approximately 2 miles into the Upper New York Bay, as shown in Figure 2-1.

The City of Bayonne is a peninsula with Newark Bay to the west, the Kill Van Kull to the south, Upper New York Bay to the east, and Jersey City to the north. Across Newark Bay to the west are the cities of Newark and Elizabeth. Across the Kill Van Kull to the south is Richmond County (Staten Island), New York. Kings County (Brooklyn), New York, is east of Bayonne, across the Upper New York Bay. This area is heavily populated and heavily industrialized.

Major highways in MOTBY's area include Interstate 95 (New Jersey Turnpike) to the west and Interstate 78 (New Jersey Turnpike Extension) to the north. Interstate 95 runs north-south through the heavily populated areas of northeastern New Jersey and enters New York City to the north via the George Washington Bridge. Interstate 78 runs through the northern section of Bayonne, connecting Bayonne and Jersey City with lower Manhattan via the Holland Tunnel.

2.2 HISTORY

MOTBY was originally constructed in 1939 by the City of Bayonne as the Bayonne Port Terminal. The U.S. Department of the Navy purchased the Bayonne Port Terminal in 1941 due to the need for additional facilities in the New York Harbor area. The purchase consisted of 716 acres of land and water rights, including 160 acres of manmade land and 1.7 miles of ship berthing space, roads, and buildings. Construction of the U.S. Naval Supply Depot began in 1941 and was completed in 1942. The depot was active in both World War II and the Korean conflict. In September 1959, the depot was redesignated the U.S. Naval Supply Center. MOTBY was established in July 1965 under the jurisdiction of the Commander, Military Traffic Management and Terminal Service, as a tenant of the U.S. Naval Supply Center. In July 1967, the entire installation was transferred to Army control and designated MOTBY. The missions of the installation while under Navy control were to serve as the primary east coast distribution point for ordnance and electronic materials; to store war reserve materials; to serve as a



SOURCE: USATHAMA, 1980

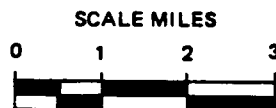


FIGURE 2-1
VICINITY MAP
MILITARY OCEAN TERMINAL,
BAYONNE, NEW JERSEY

2-2

storage and issue point for petroleum products; to supply fresh provisions and bulk petroleum products to ships and activities of the Naval Base, New York; and to serve as a storage point for National Stockpile materials. The current missions of MOTBY are to plan, coordinate, and accomplish the movement of cargo through the terminal, and to function as host to other agencies at the terminal.

2.3 SITES FOR REMEDIAL INVESTIGATION

Eight sites were included in the RI discussed herein. Background information on these sites, identified in Figure 2-2, is provided in the following sections.

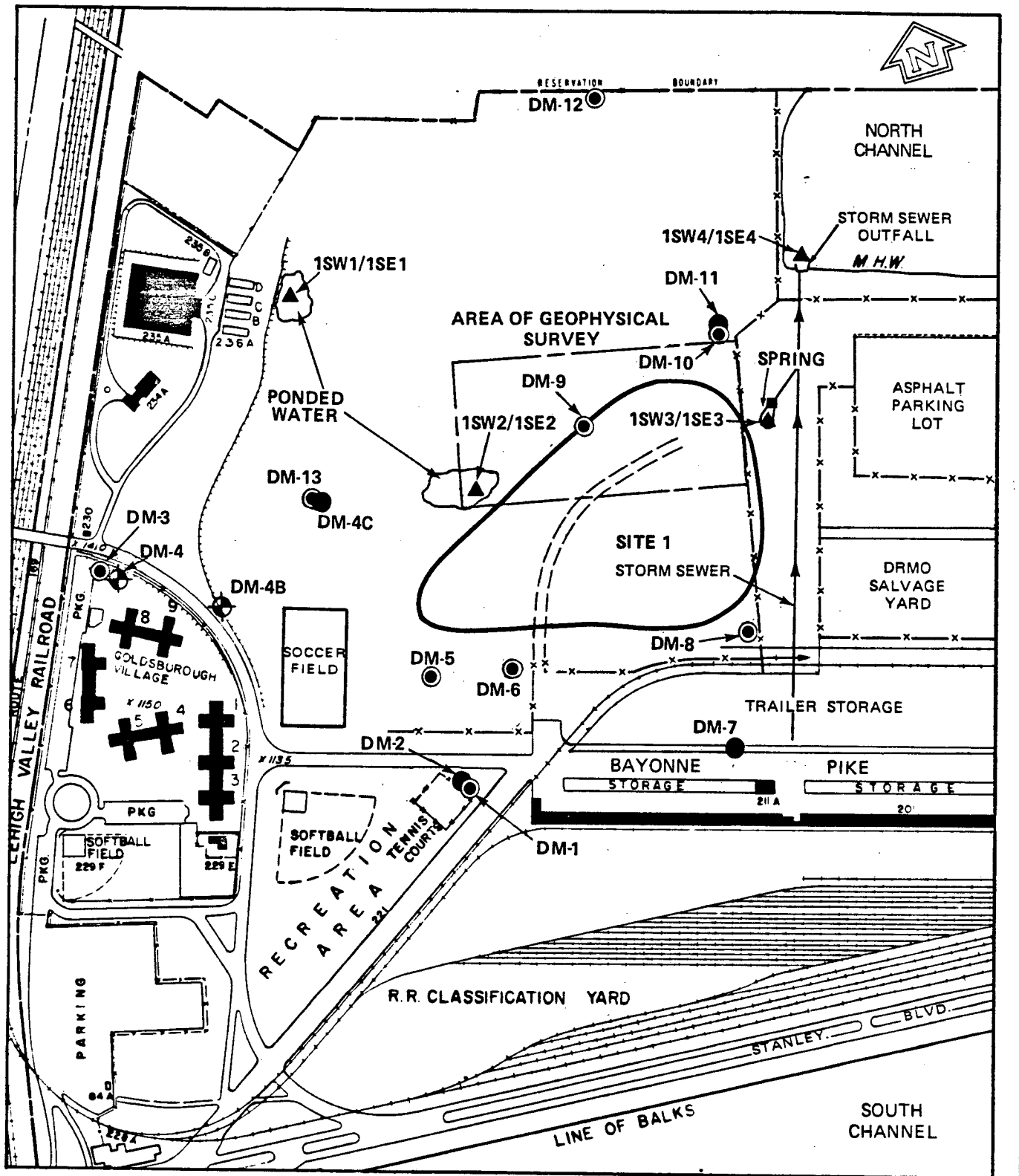
2.3.1 Site 1, Landfill

The former post landfill, approximately 5 acres in size, is located at the western end of the terminal beneath Areas 213, 214, and 215 (Figure 2-3). Landfilling was initiated in the early 1940's along the southeastern edge of a roughly circular marsh area open to the North Channel of the terminal. Filling progressed by placing waste along the marsh/land contact and advancing northward into the marsh. Elevations within the marsh were near mean sea level (msl), but landfill operations brought the final elevation to approximately 10 feet msl. A layer of sand and gravel was later placed on the landfill, creating a generally flat land surface.

An existing gravel road on the landfill parallels the northwestern landfill boundary and leads to a loading platform on the northern end of the landfill. This platform area has been abandoned and is overgrown with grasses and weeds. Approximately 35 acres of adjacent marsh were used not as a landfill, but to dispose of sediment that was hydraulically dredged from the North Channel. These channel dredgings were pumped into the marsh area and allowed to settle out. This procedure produced an irregular land surface throughout much of the area, resulting in a few low areas that are poorly drained and usually wet. This area extends from the landfill to the present shoreline.

An approximate 2-acre area, situated partially on the western edge of the landfill, was used for the disposal of construction debris (concrete and asphalt rubble) after the landfill was covered. This debris--placed over the landfill and onto low areas of the hydraulic fill--was estimated to be 5 feet thick based on exposed surfaces. A gravel parking area where some small dumpsters are currently stored is located south of the landfill and debris areas.

**FIGURE 2-2
LAYOUT AND SITE LOCATION MAP
MILITARY OCEAN TERMINAL BAYONNE, NEW JERSEY**



LEGEND:

- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- ⊕ SOIL BORING
- ▲ SURFACE WATER / SEDIMENT SAMPLE
- INLET
- STORM SEWER

0 400 Feet
SCALE

FIGURE 2-3
SITE 1, LANDFILL
MOTBY, NEW JERSEY

BASE MAP SOURCE: MOTBY Master Plan,
General Site Map, 1982.

The landfill was operated until 1969, when it was covered with sand and gravel. The remaining marsh was periodically filled during the 1970's with sediment from the hydraulic dredging. Most of the construction debris was placed on the landfill and dredgings during the late 1970's, but some unauthorized disposal occurred more recently as observed during a site visit in June 1986. The construction debris was plowed level and covered with rocky soil in 1989. Geophysical data collected during a survey completed as part of this RI define the northern edge of the landfill and the location of metal objects buried within the landfill. This information is discussed in Section 4.3.

During operation of the landfill, it was reportedly used for the disposal of inedible foodstuffs, construction debris, appliances and equipment, pesticide containers, waste oils and grease, and other sanitary wastes (USAEHA, 1984).

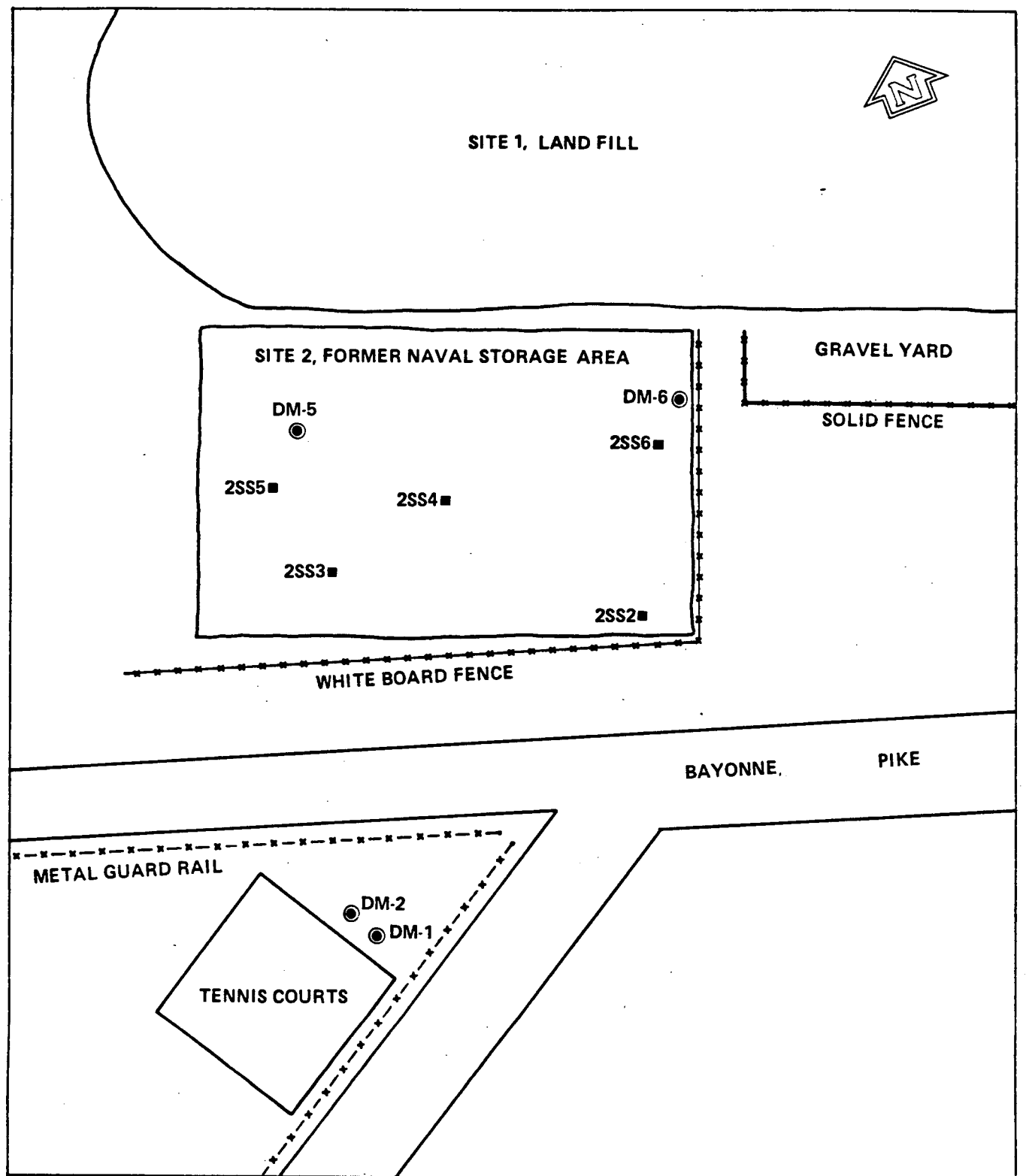
Burning operations were reportedly carried out within the present Defense Reutilization Marketing Office (DRMO) salvage yard for a 1- to 4-year period in the 1960's. These operations took place in a metal tepee-shaped incinerator. Most of the waste burned in this incinerator consisted of wood and paper. Residues from this operation were then landfilled at Site 1 (USATHAMA, 1980).

2.3.2 Site 2, Former Naval Storage Area

Prior to Army acquisition of MOTBY in 1967, the Navy used designated Areas 212 and 222 (Figure 2-2) as a salvage storage yard. Reportedly, Area 212 was used to hold salvageable metals and equipment, and Area 222 was used as a drum storage area. Liquids in the drums (reported to have included waste oils and solvents) were also reported to be regularly spilled while being stored, and excess liquids were purposely poured onto the ground for disposal. Area 212 is presently used as a holding area for trailers, and Area 222 is an unused grassy and weed-covered field. The salvage and storage areas were situated on installation property that was constructed with hydraulically placed channel dredgings. The westernmost part of Area 222 lies on hydraulically filled marsh and was probably not part of the naval storage area. The easternmost portion of Area 222 was previously used for drum storage and is the area of environmental concern investigated as Site 2 in this RI (Figure 2-4).

2.3.3 Site 3, Underground Storage Tanks

Twelve abandoned underground storage tanks were identified at the terminal and included in the inventory provided for USEPA's Underground Storage



LEGEND:

- MONITORING WELL
- SOIL SAMPLE

0 100 FEET
SCALE

Source: Modified from MOTBY Master Plan,
General Site Map, 1982.

FIGURE 2-4
SITE 2, FORMER NAVAL STORAGE AREA
MOTBY, NEW JERSEY

Tank (UST) program. The approximate locations of these tanks are shown in Figure 2-2. Information relative to the tanks is provided in Table 2-1 and on the Tank/Container Inspection and Sampling Records included in Appendix E. Information provided on the inspection records includes materials and physical features of construction, port opening/access information, type and volume of contents, and description of contents, as well as temperature, conductivity, and pH of liquid contents.

Tanks 7, 8, 9, and 10--shown on Figures 2-5 and 2-6--were fuel supply tanks for a gasoline station service island identified as Building 44E. Tanks 16, 17, and 18 also supplied fuel to a service station pump island located on 9th Street, as shown on Figure 2-7. Two of the three service pumps at this station have been removed and the station abandoned. The remaining pump is nonfunctional. Tank 19 was a waste oil storage tank for vehicle maintenance operations in Building 44D. The location of Tank 19 is shown in Figure 2-5. As-built drawings for Tank 19 are shown in Figure 2-8. Tanks 20, 21, and 22--shown in Figure 2-9--were also associated with a gasoline service station. These tanks are located in an area that was leased to a private contractor for more than 15 years. Tank history is unknown during that period. Prior to leasing, the tanks reportedly contained leaded gasoline.

Tank 23 is an abandoned underground propane tank used for operations in the associated vaporizer house (Building 120), as shown in Figure 2-10. The tank is constructed of steel and appears to be set in a concrete vault with a 30,000-gallon capacity. The vaporizer building (containing piping, gauges, and control valves) is located above the tank. The system is equipped with a concrete vault at one end to access belowground piping, gauges, and valves, as shown in Figure 2-11.

After transfer of the installation to the Army in 1967, Tank 23 was reportedly not used. There was a period of approximately 15 years during which the fenced area surrounding the tank was leased to a private contractor. Although no information is available concerning tank use during the lease period, it appears that the tank was not used. In the late 1970's, a fire in the area damaged the vaporizer building and burned the debris/weeds on the ground surface above the tank. Apparently, no known damage occurred to the tank or system piping. The concrete access vault is currently filled with water to a depth of approximately 3 feet. The elevation of the water is primarily a result of groundwater infiltration.

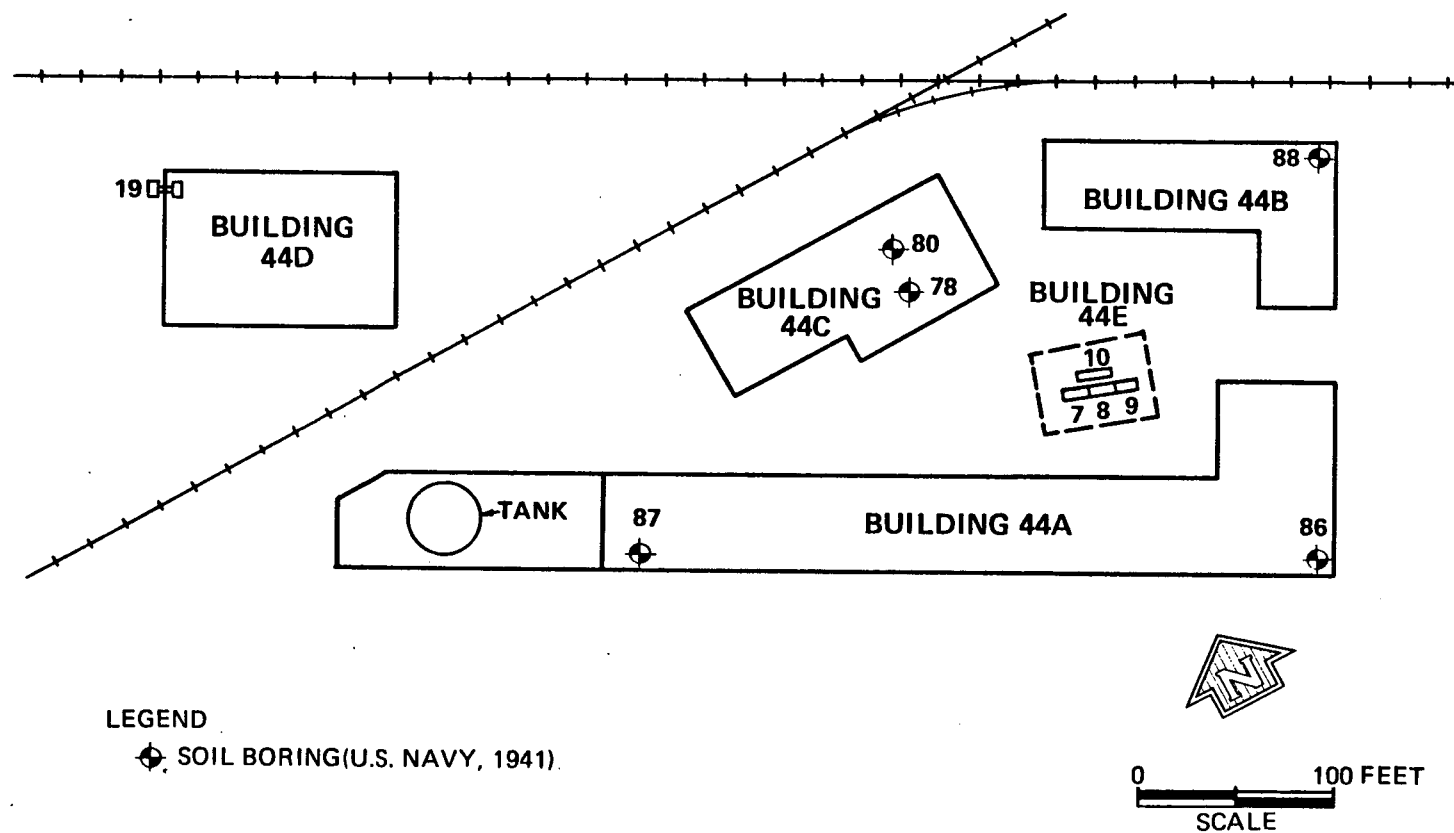
TABLE 2-1
Abandoned Underground Storage Tanks,
MOTBY, New Jersey

<u>Tank No.</u>	<u>Building/ Location</u>	<u>Contents^a</u>	<u>Capacity (gallons)</u>	<u>Construction Material</u>	<u>Installation Date</u>	<u>Comments</u>
7	44E ^b	Leaded gasoline	2,000	Concrete	1942	Abandoned after 1980
8	44E ^b	Unknown	2,000	Concrete	1942	Abandoned after 1980
9	44E ^b	No. 2 diesel	2,000	Concrete	1942	Abandoned after 1980
10	44E ^b	Unleaded gasoline	4,000	Steel	1961	Abandoned after 1980
16	106 ^b	Leaded gasoline	2,000	Concrete	1942	Abandoned prior to 1965
17	106 ^b	Leaded gasoline	2,000	Concrete	1942	Abandoned prior to 1965
18	106 ^b	No. 2 diesel	1,000	Concrete	1942	Abandoned prior to 1965
19	44D	Waste oil	1,000	Steel	1946	Abandoned prior to 1965
20	134 ^b	Leaded gasoline	15,000	Steel	1946	(c)
21	134 ^b	Leaded gasoline	15,000	Steel	1946	(c)
22	134 ^b	Leaded gasoline	15,000	Steel	1946	(c)
23	120	Propane	30,000	Steel	1944	(c)

^a Suspected contents based on available information.

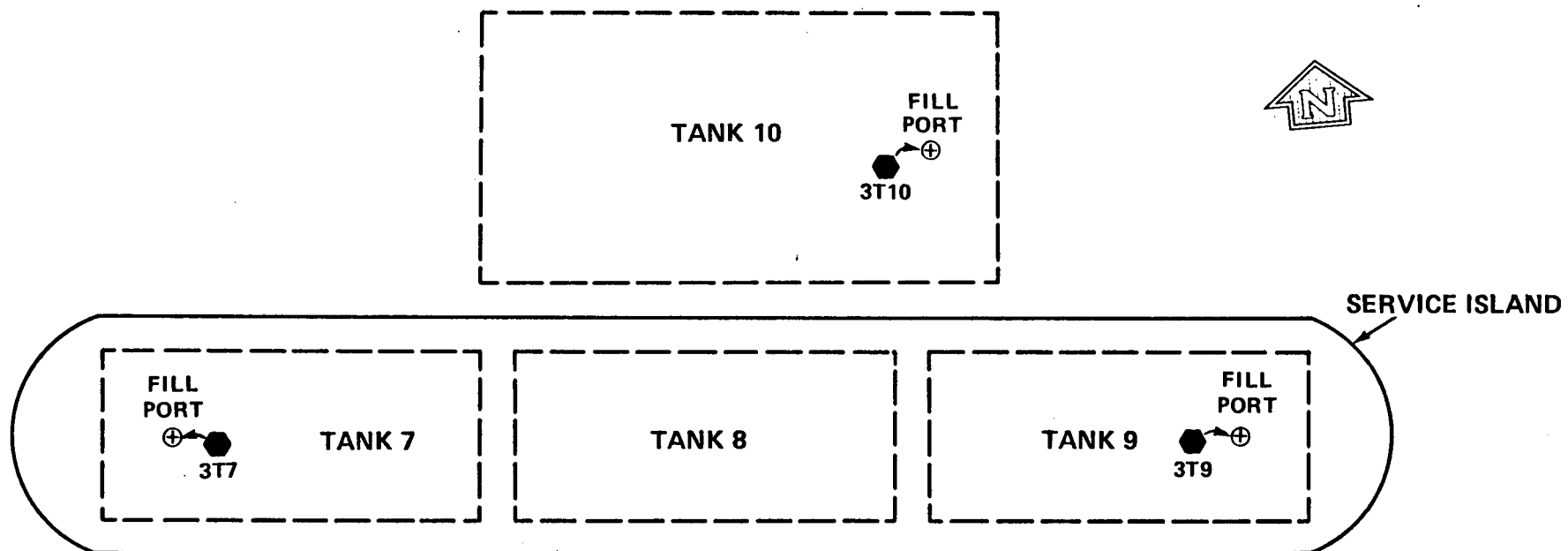
^b Service station tanks.

^c Contents are reported as known contents prior to land containing these tanks being leased to a private contractor for a period of approximately 15 years. Use of tanks by the contractor is unknown.



Source: Modified from MOTBY Master Plan,
General Site Map, 1982.

FIGURE 2-5
SITE 3, UNDERGROUND STORAGE TANKS
TANKS 7, 8, 9, 10 AND 19
MOTBY, NEW JERSEY



LEGEND

3T7  TANK SAMPLE

--- APPROXIMATE TANK LOCATION

0 2 4 6 FEET

SCALE

Source: Modified from MOTBY Underground
Utility Map, Zone 6.

FIGURE 2-6
SITE 3, UNDERGROUND STORAGE TANKS
TANKS 7, 8, 9, AND 10, BUILDING 44E
MOTBY, NEW JERSEY

9TH STREET



DIESEL FUEL
PUMP

SERVICE ISLAND

GASOLINE
PUMP

GASOLINE
PUMP

NOTE: NORTHERN TWO PUMPS HAVE BEEN REMOVED,
REMAINING PUMP IS INOPERABLE

CONCRETE FOUNDATION
OF
BUILDING 106

FILL PORT

DRY, NO
SAMPLE

TANK 18

3T17

TANK 17

3T18

TANK 16

CONCRETE PAD

0 10 FEET
SCALE

TANK SAMPLE

Source: Modified from MOTBY Underground
Utility Map, Zone 3DD.

FIGURE 2-7
SITE 3, UNDERGROUND STORAGE TANKS
TANKS 16, 17 AND 18, BUILDING 106
MOTBY, NEW JERSEY

2-14

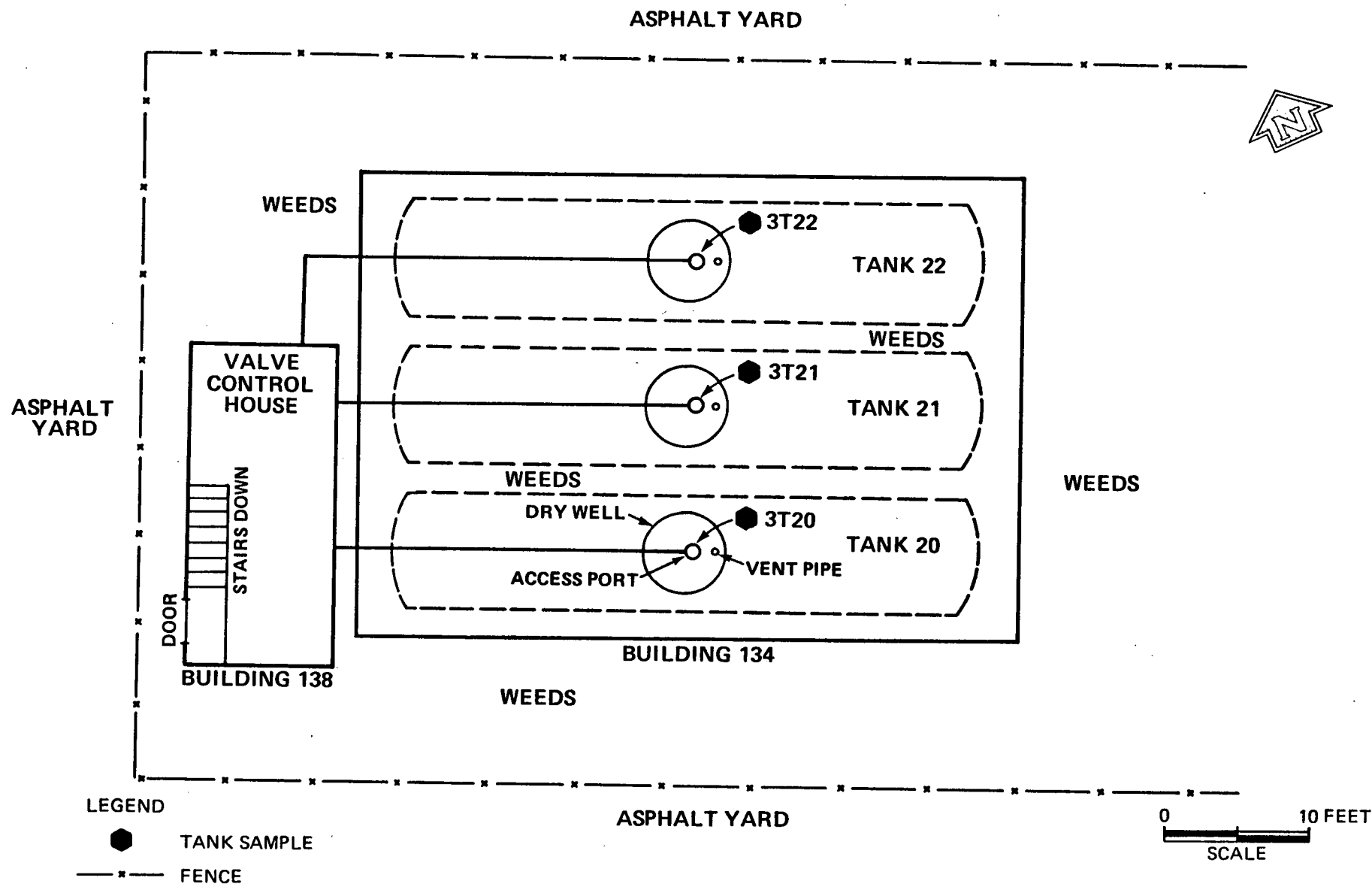
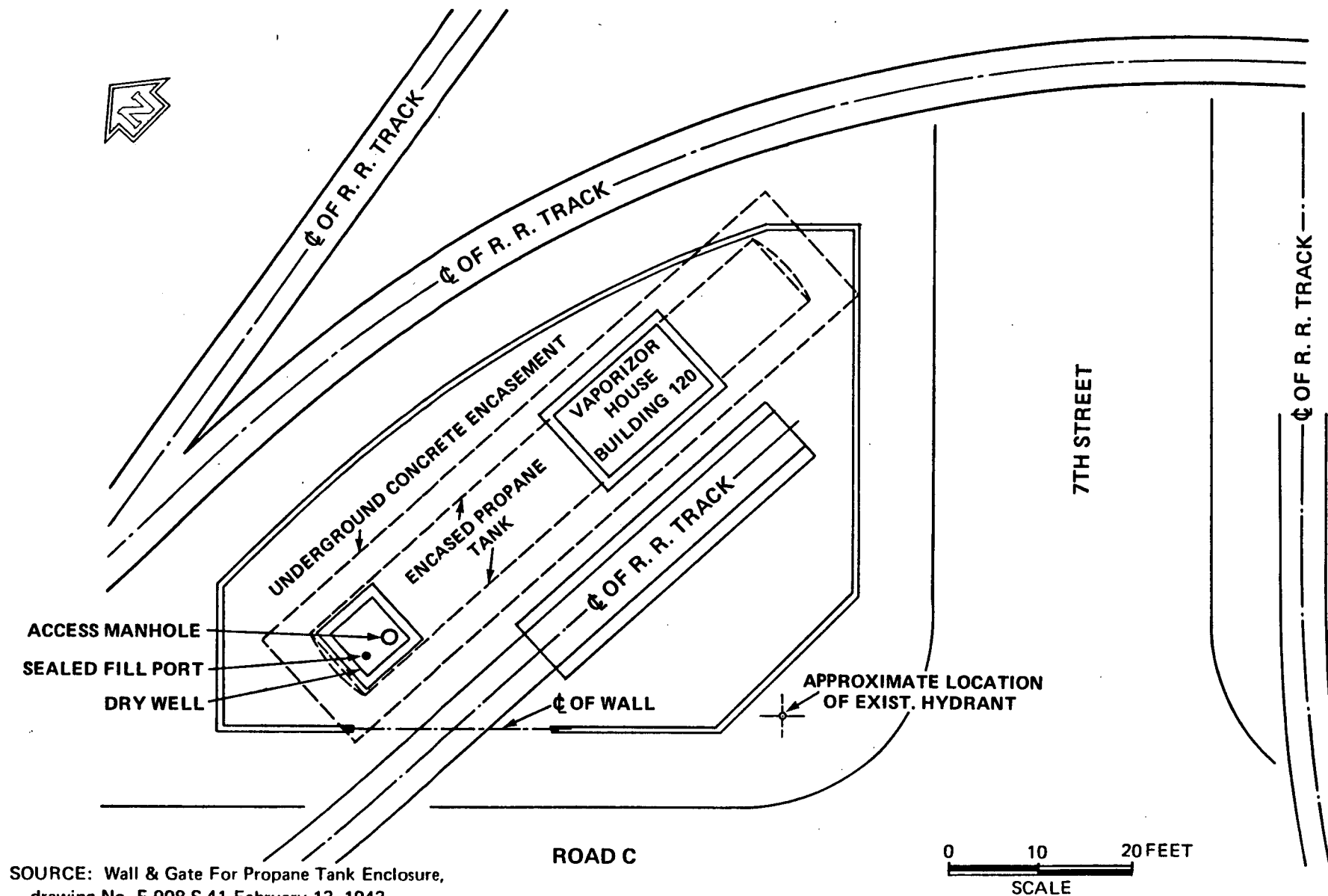


FIGURE 2-9
SITE 3, UNDERGROUND STORAGE TANKS
TANKS 20, 21 AND 22, BUILDING 134
MOTBY, NEW JERSEY

SOURCE: Modified from As Built and Subsurface
Conditions drawing No. N959, August 15, 1948.

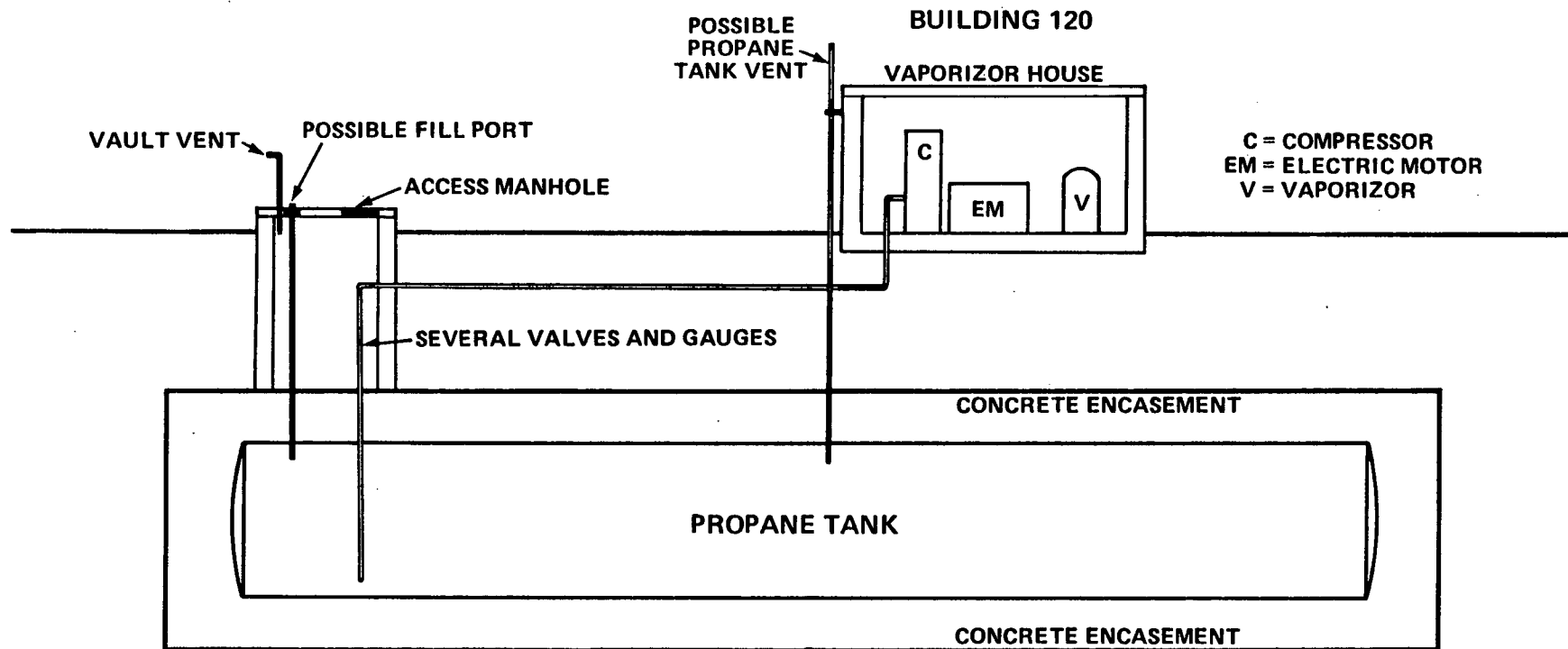
Dames & Moore

2-15



SOURCE: Wall & Gate For Propane Tank Enclosure,
drawing No. F.908-S.41, February 13, 1943.

FIGURE 2-10
SITE 3, UNDERGROUND STORAGE TANKS
TANK 23, BUILDING 120
MOTBY, NEW JERSEY



NOTE: BELOW GROUND DETAILS
WERE NOT VERIFIED, NO AS -
BUILT OR CONSTRUCTION
PLANS AVAILABLE

0 10 Feet
SCALE

FIGURE 2-11
SITE 3, UNDERGROUND STORAGE TANKS
PROFILE OF TANK 23, BUILDING 120
MOTBY, NEW JERSEY

SOURCE: Projection based on drawing No. F. 908-S.41
and field notes from tank inspection.

2.3.4 Site 4, DRMO Drum Storage Area

The DRMO salvage yard (Figure 2-12) is a paved and fenced area approximately 6 acres in size, located in the northwestern corner of MOTBY in Area 204. The yard is used for temporary storage of salvageable materials, as well as for drum storage of waste oil, xylene, pentachlorophenol, and dichlorodiphenyltrichloroethane (DDT). In 1981, MOTBY submitted a Resource Conservation and Recovery Act (RCRA) Part A permit application for a small area of the DRMO salvage yard to become a designated Hazardous Waste Storage Facility. This area, identified as Site 4 and investigated as part of this RI, is a 25-by 50-foot area located inside the DRMO yard along the northern boundary and adjacent to an area used for the storage of used tires. The site is bounded to the east and west by low concrete road barriers. Runoff from the site is toward the west, as shown in Figure 2-12. Use of this area as a RCRA storage area was discontinued after submittal of the Part A permit application.

2.3.5 Site 5, Battery Acid Pit

A battery acid disposal pit located within the battery shop in the north-central area of Building 45 (Figure 2-13) was used from the 1940's through the 1970's for the neutralization of lead-acid vehicle batteries. During this period, the contents from an estimated 60 batteries per year were neutralized.

The closed pit, which allowed access to the underlying soil, was an approximate 2-foot-square hole in the concrete floor of the building. A floor drain adjacent to the pit appears to have received corrosive drainage as a result of building operations. The floor drain leads to the sanitary sewer, as shown in Figure 2-13.

During the late 1970's or early 1980's use of the pit was discontinued, and it was covered with a concrete cap. The concrete filling the pit was reinforced with rebar, and a metal grate was placed over the pit approximately 1 inch below the concrete surface.

2.3.6 Site 6, PCB Spill Area

One PCB transformer in the transformer area adjacent to Building 105 (Figure 2-14) ruptured and reportedly sprayed PCB-contaminated oil on the walls and soil surface of the transformer enclosure. The transformers in this area are

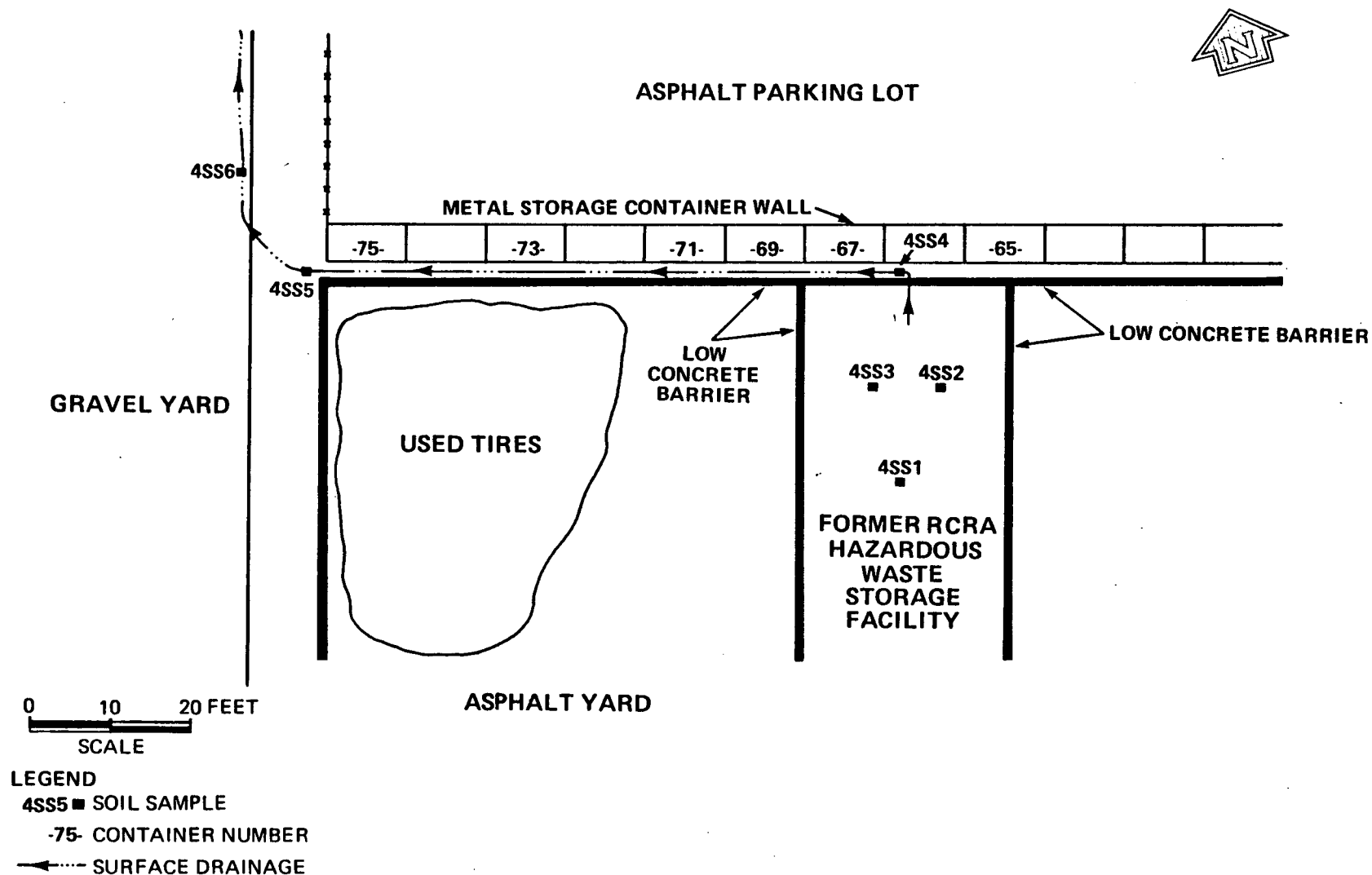
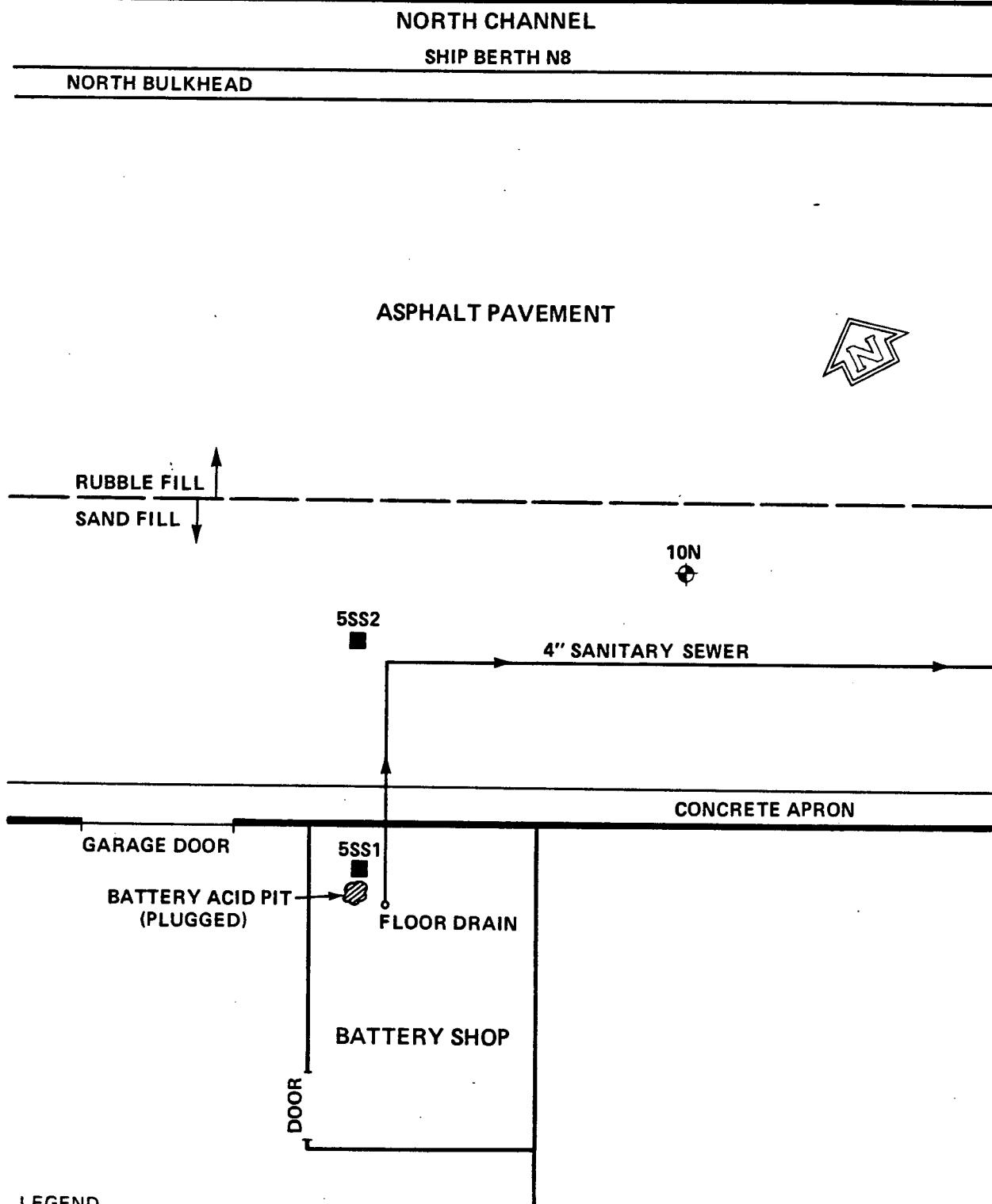


FIGURE 2-12
 SITE 4, DRMO DRUM STORAGE AREA
 MOTBY, NEW JERSEY

SOURCE: Aerial photographs(USEPA,1982)
 Modified by RI field notebook.



LEGEND

- SOIL SAMPLE
- ⊕ SOIL BORING(U. S. NAVY, 1965)
- SANITARY SEWER



SOURCE: Modified MOTBY Underground Utility Map,
Zone 13 and RI Field Notebook.

FIGURE 2-13
SITE 5, BATTERY ACID PIT
MOTBY, NEW JERSEY

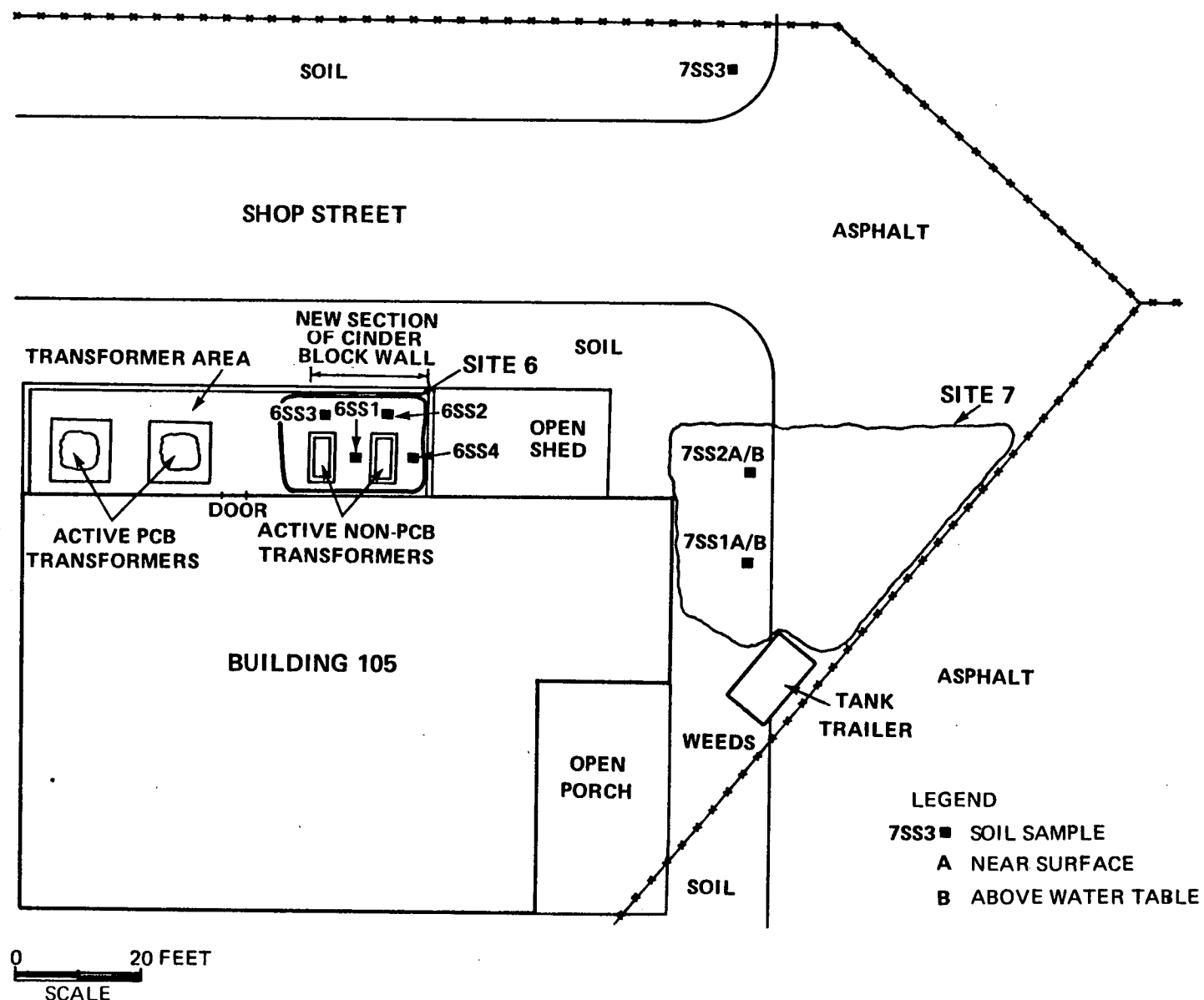


FIGURE 2-14
 SITE 6, PCB SPILL AREA AND
 SITE 7, BUILDING 105 DRUM STORAGE AREA
 MOTBY, NEW JERSEY

SOURCE: Modified MOTBY Underground
 Utility Map Zone 6DD.

located on individual concrete pads, surrounded by three concrete walls attached to the north wall of Building 105. Access to this area is through Building 105. The transformers are surrounded by a thin gravel blanket, and the entire enclosure is open to the atmosphere.

Reportedly, in 1983-1984, a cleanup of this area was conducted by the installation. Approximately 2 feet of soil surrounding the transformer pad was excavated, removed, and disposed of off post. The area was then filled with soil and covered with gravel. The volume of soil removed is unknown.

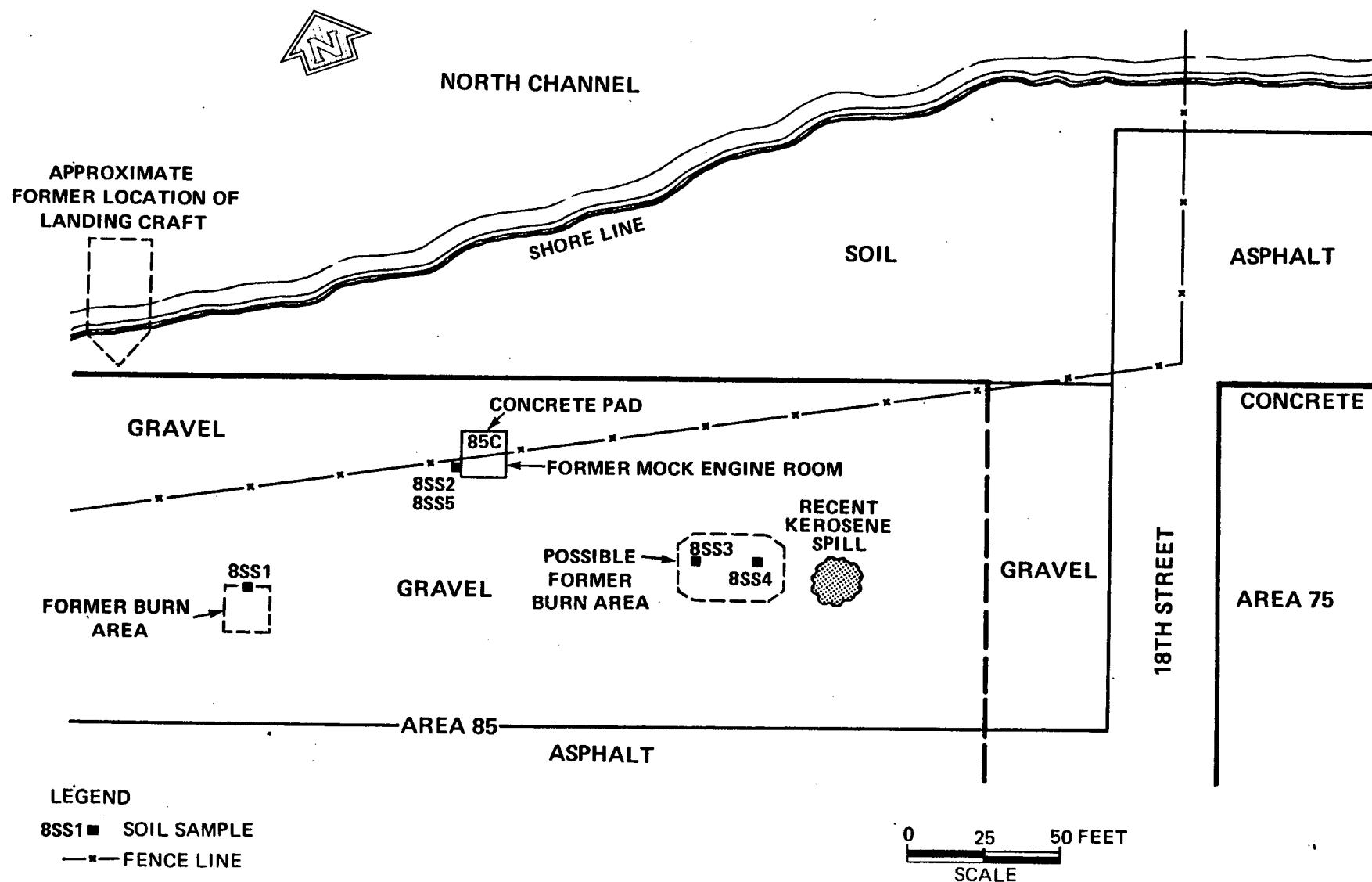
2.3.7 Site 7, Building 105 Drum Storage Area

Site 7 is a 30- by 60-foot area partially covered by asphalt. Approximately 30 drums containing liquid wastes, including waste oils, were stored on sandy soils on the east side of Building 105 (Figure 2-14). In addition, liquid wastes reportedly have been poured onto the surface in this area as a means of disposal. Some of the drums stored onsite have leaked into the soils, and ground staining is evident in the area. The drums were removed from the site in 1989, but no soil cleanup has occurred.

2.3.8 Site 8, Fire Training Area

The former Fire Training Area (FTA), located at the northwestern end of the terminal near the North Channel (Figure 2-15), was used for firefighting training exercises during a 10- to 20-year period from 1941-1967 when MOTBY was under control of the Navy. The exact period of operation is unknown. Reportedly, this area--identified as Site 8--was no longer used for firefighting training after MOTBY became an Army installation in 1967.

The FTA consisted of two open steel tanks situated on the sand, a mock engine room, and an old landing craft. Reportedly, the two steel tanks were approximately 15 feet in diameter and 4 to 5 feet tall. During training exercises, waste oil was fed into the tanks and ignited, and then extinguished using a protein firefighting foam. A small concrete building of approximately 40 to 50 square feet was situated between the two tanks. The structure contained a small open steel tank for containing waste oil. During firefighting practices, waste oil in the steel tank was ignited with kerosene. The old landing craft, located west of the mock engine room, was also lighted for extinguishing during training practice. None of the structures still exist, though a concrete pad in the area is the likely location of



the small concrete building. The possible locations of former structures, shown on Figure 2-15, were identified from historical aerial photographic interpretation.

Training exercises were reportedly held every several weeks for 10 to 20 years. Although it is not known what types of wastes were burned at the FTA, it is assumed that the waste oils were contaminated with other waste flammables, potentially including flammable solvents and flammable liquid paint wastes such as strippers and thinners. It was typical during this time period to use the training exercises both as firefighting practice sessions and as a means for disposal of flammable waste liquids generated during routine installation operations.

Although the FTA was reportedly situated on a sandy beach substrate, the area is currently covered with road-bed gravel. The thickness of the gravel cover is approximately 1 foot, but it is not known when the cover was placed in this area. This area is presently used for temporary storage of vehicles shipped through MOTBY. At various times, automobiles, trucks, and construction equipment have been stored at Site 8, and it is likely that various undocumented small quantities of oil, gasoline, diesel fuel, and automotive fluids have leaked onto this site due to the current operations.

3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 PHYSICAL DESCRIPTION

3.1.1 Climatology

MOTBY is situated on a peninsula along the northeastern border of New Jersey and New York, between Newark Bay and Upper New York Bay. This area is heavily influenced by the nearby Atlantic Ocean and experiences a temperate climate. The average annual temperature is 54°F (12.1°C), with extreme average annual temperatures ranging from 45°F (7.3°C) to 62°F (16.9°C). Average annual precipitation is approximately 41.5 inches (USATHAMA, 1980). Precipitation occurs on an average of 135 days/year. A mean annual maximum of approximately 2.75 inches of rainfall can occur over a 24-hour period, or 1.00 to 1.25 inches over a 1-hour period. Snowfall occurs on an average of 8 days/year, with total average annual accumulation of less than 32 inches. Mean average annual pan evaporation is approximately 40 inches, with 73 percent of this evaporation occurring between May and October (USGS, 1970). Winds measured at Newark International Airport are from the southwest at 10.3 miles/hour (USATHAMA, 1980), but local winds are from the northwest (MOTBY, 1982).

3.1.2 Topography, Geology, and Soils

MOTBY is located on a totally manmade peninsula originally constructed in 1941. The peninsula extends into the waters of Upper New York Bay for approximately 1.8 miles. Because of its manmade character, no natural soil or bedrock is exposed except at the westernmost edge bordering the City of Bayonne.

Prior to 1941, the present area of MOTBY was a totally submerged, unimproved section of Upper New York Bay. Because MOTBY was built on riparian land or bay substrate, it was never specifically included in regional geologic reports. The 1980 Installation Assessment (USATHAMA, 1980) included information from several regional geologic studies (i.e., Nemickas, 1976; Pertmutler and Arnow, 1953) that focused on the northeast New Jersey-New York City area.

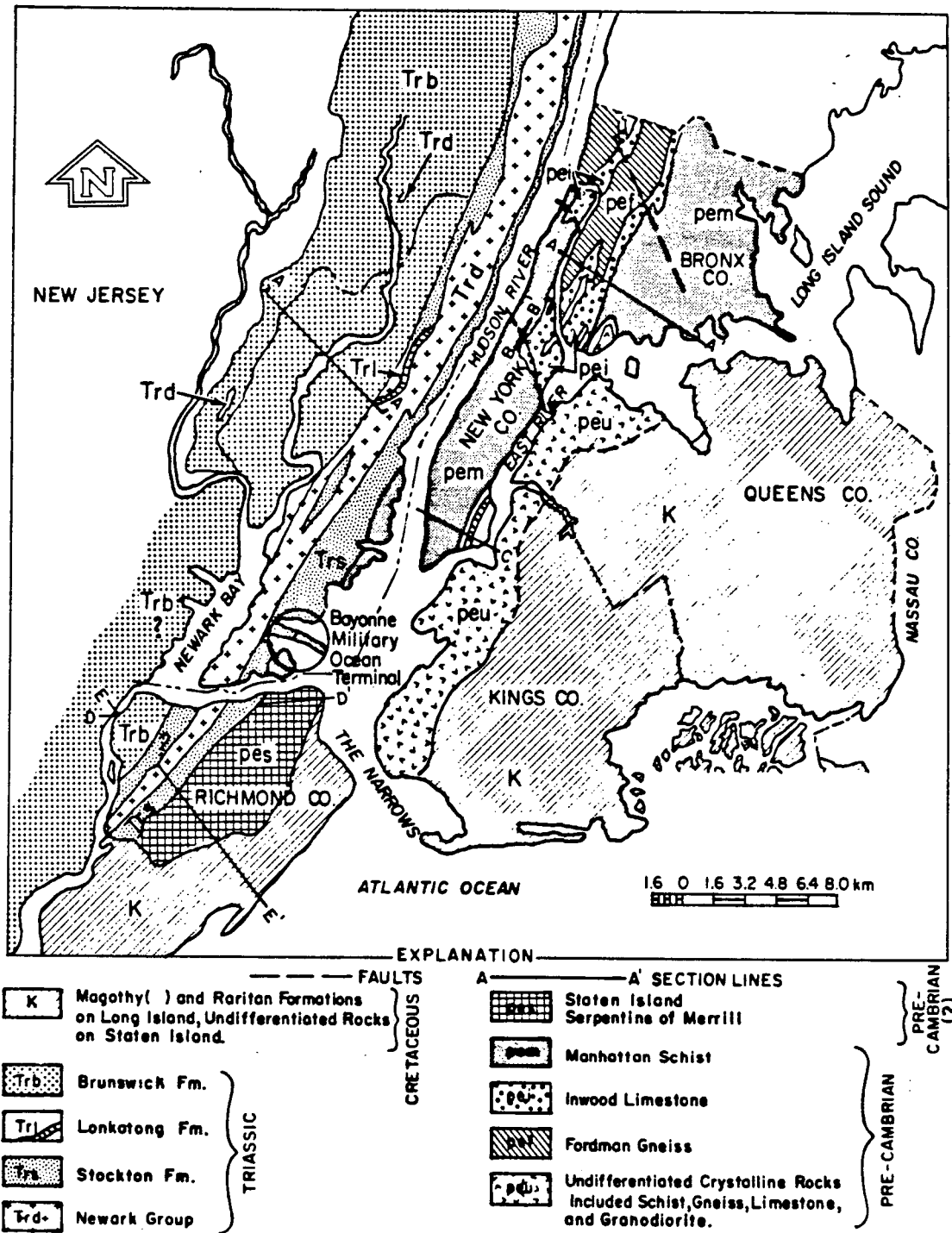
Other usual sources of regional information, such as county soil surveys or U.S. Department of Agriculture aerial photography, are not available due to the complete urban character and man-made nature of the subject area. Site-specific geologic and subsurface information taken from approximately 150 engineering borings conducted at MOTBY since construction planning began in 1939 were

reviewed and included as appropriate in discussions of the individual sites. The following paragraphs outline the general geologic conditions near MOTBY.

The study area is characterized by several topographic features. The terminal lies along the extreme eastern edge of the New Jersey Lowlands Physiographic Province. These lowlands consist mainly of gentle west-to-northwest dipping Triassic sandstones and shales of the Newark Group, which are overlain by varying thicknesses of glacial till and more recent sediments. The Palisades Ridge (diabase) extends for a distance of more than 40 miles along the west bank of the Hudson River in a southwesterly direction from Haverstraw, New York, through Hoboken and Bayonne, New Jersey, into west-central Staten Island. The ridge generally decreases in elevation from a maximum of 525 feet msl near the New York-New Jersey state boundary to near sea level near the western edge of the terminal. A narrow belt of Atlantic Coastal Plain sediments underlies glacial till of varying thickness east and south of the terminal, on Staten Island and Long Island. These southeast-dipping sediments thicken to the southeast (USATHAMA, 1980). Figure 3-1 shows the preglacial geologic formations in the area.

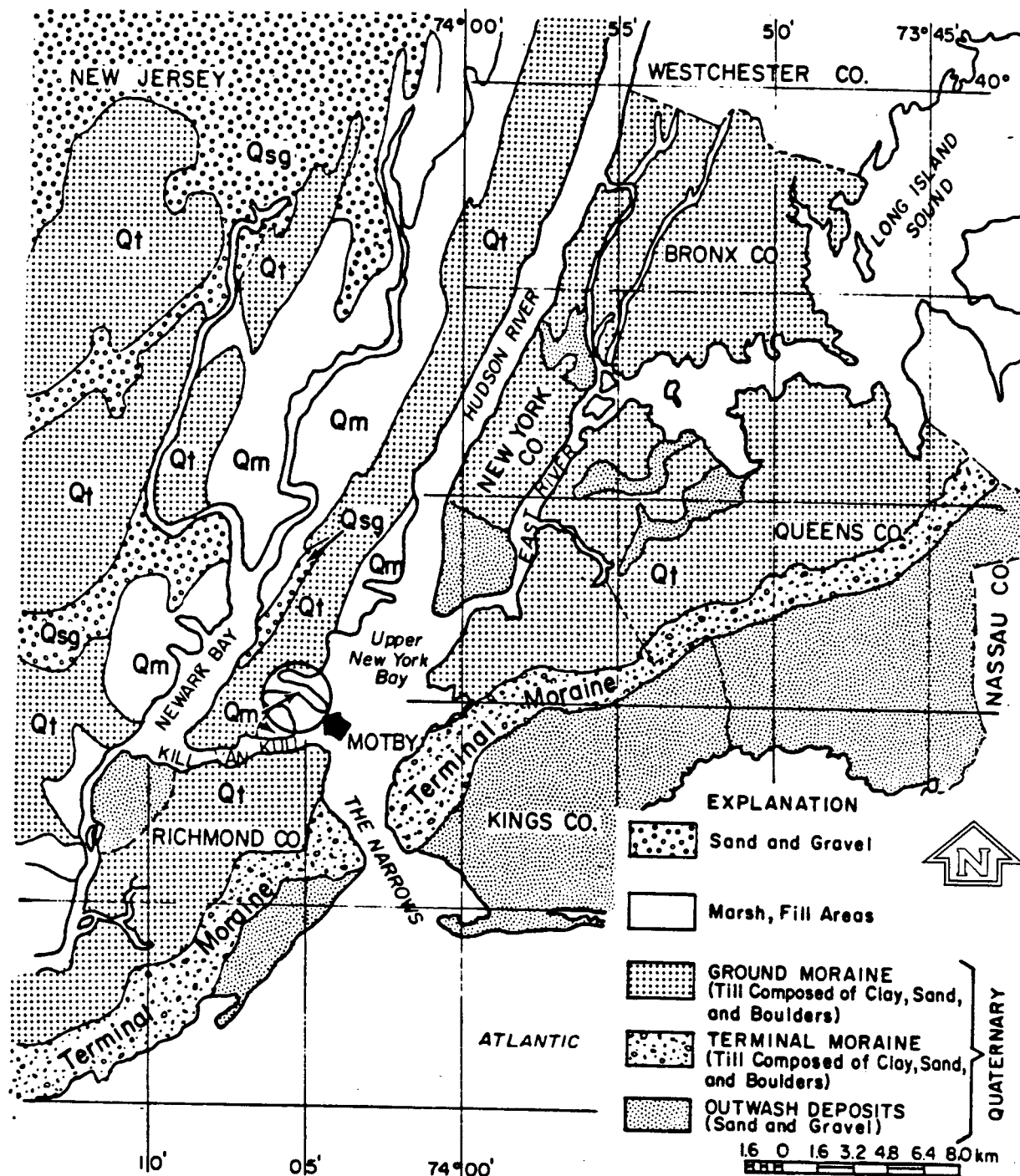
Several glaciers that moved across northern New Jersey during Pleistocene time scoured the land surface, filled and formed new stream channels and lakes, and left behind varying thicknesses of glacial till, including a terminal moraine that extends northeast to southwest across Long Island and southern Staten Island, New York, and southeast to northwest from Perth Amboy to Dover, New Jersey. This terminal moraine marks the southern limit of the Wisconsin Glaciation (USATHAMA, 1980). Figure 3-2 shows the distribution of the glacial and more recent deposits.

The subsurface interval above bedrock at MOTBY consists of three general unconsolidated soil layers representing both natural and manmade conditions. As shown in Figure 3-3, sand and gravel of glacial origin are found on bedrock. This layer is overlain by a layer of organic-rich river mud deposited on the bay substrate. This river mud, though present when MOTBY was constructed, is probably not a consistent layer at present. The filling of the MOTBY peninsula would have disturbed this layer, causing much of it to be washed away. The uppermost layer consists of both hydraulic fill (mostly sand and gravel) and coarse stabilizing construction fill.



SOURCE: USATHAMA, 1980
from Nemickas, 1976 and
Perlmutter and Arnow, 1953.

FIGURE 3-1
GENERALIZED GEOLOGIC MAP
MOTBY, NEW JERSEY



SOURCE: USATHAMA, 1980
from Nemickas, 1976 and
Perlmutter and Arnow, 1953.

FIGURE 3-2
DISTRIBUTION OF GLACIAL AND MORE RECENT SEDIMENTS
MOTBY, NEW JERSEY

3-5

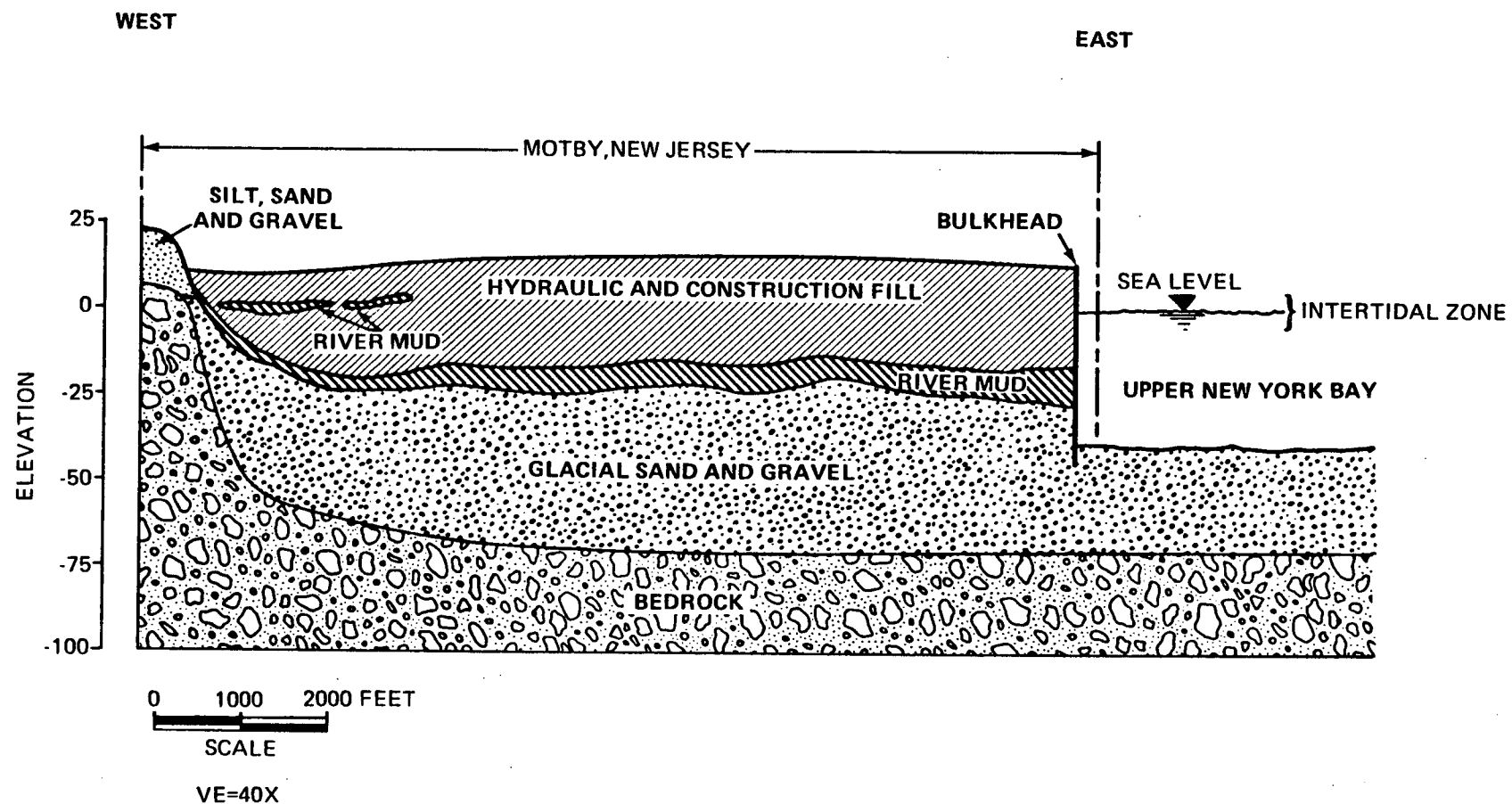


FIGURE 3-3
GENERALIZED SUBSURFACE PROFILE
MOTBY, NEW JERSEY

Sections 3.1.2.1 through 3.1.2.9 describe site-specific geologic conditions for the RI study areas at MOTBY.

3.1.2.1 Site 1, Landfill. Site 1 is located at the western end of MOTBY, north of Bayonne Boulevard and west of the secured storage areas (Figure 2-3). This site was gradually filled with clean or sanitary fill from the 1940's to the early 1970's. The landfill was built on a marsh area that resulted from the construction of MOTBY facilities to the west, south, and east. Prior to 1941, this area was always submerged and contained no significant marshlands. The present elevation of the site ranges from 10 to 12 feet msl; after MOTBY was constructed but prior to landfilling, this area had surface elevations at or a few feet above sea level.

Subsurface geologic conditions were identified during the drilling of exploratory boreholes for the installation of monitoring wells for this RI. Three borings extended to 50 feet, one boring extended to 24 feet, and nine borings extended to depths of less than 20 feet. Data on landfill size and history, used to create likely hydrogeologic scenarios, were taken from an aerial photographic study (USEPA, 1987c).

Approximately 9 feet of hydraulic or sanitary fill is present immediately below ground surface. Underlying this fill is a thin layer of organic-rich silty clay that is associated with the marsh area created from the construction of MOTBY. Up to 20 feet of grayish brown fine sand--which was probably placed during the 1941-1942 construction phase of MOTBY--is found below this organic layer. Beneath the sand is another thin layer of organic-rich soils that corresponds to the original substrate of the bay prior to the construction in 1941. Below approximately 35 feet, very loose sand and gravel layers are present beneath the second organic-rich layer. Bedrock is present approximately 70 feet below ground surface.

Two aquifers were encountered below Site 1--a shallow water table aquifer and a deeper partially confined aquifer located below the second organic layer. The potentiometric surface of the deeper aquifer was found to be several feet below the water table of the shallow aquifer. Additional hydrogeologic data on these two aquifers are presented in Section 4.3.5.

3.1.2.2 Site 2, Former Naval Storage Area. Site 2 is located near the central axis of the MOTBY peninsula, near the western border. The site is situated north of

Bayonne Boulevard in the eastern half of Area 222. The South Channel is located 1,100 feet south of the site, and the North Channel 1,400 feet to the northeast. Site 1 is situated immediately north of the site (Figure 2-3).

Hydraulic filling of the site area was substantially completed by 1943, and its use as a storage area began soon thereafter. The exact dimensions of the storage area changed over time, but the main section was always the eastern half of Area 222. The surface elevation of Site 2 is 12 feet msl.

The subsurface geologic profile for Site 2 was identified from the drilling of four boreholes for the installation of monitoring wells as part of this RI. Borings DM-1 and DM-2 are located south of the site, while borings DM-5 and DM-6 are located along the north side of the site. Between 7 and 11 feet of silty sand hydraulic fill is present below the surface. Approximately 14 feet of black organic-rich silty clay is present beneath the hydraulic fill. This clay is of lower permeability than the overlying fill and acts as an aquitard between the fill and the underlying soils. Approximately 13 feet of silty fine sand or fine sand is present below the organic clay layer. At least 13 feet of loose sand and gravel is present below the silty fine sand. Bedrock is present approximately 70 feet below the site.

Groundwater was encountered at a depth of approximately 4 feet below ground surface in the onsite borings. This groundwater is part of an unconfined aquifer located above the black organic clay. A deeper aquifer is present within the sand and gravel located below the black organic clay. The potentiometric surface for the deeper aquifer measured in well DM-2 was found to be several feet below the shallow aquifer water table. Section 4.3.5 presents site-specific data that further defines the properties of the two aquifers.

3.1.2.3 Site 3, Underground Storage Tanks. Tanks 7, 8, 9, and 10 are located under a gasoline service island (44E) within an area outlined by Buildings 44A, 44B, and 44C (Figure 2-5). The North Channel is located 500 feet to the north, and the South Channel is 1,000 feet to the south. Jersey Avenue, just northwest of Building 44C, was the westernmost edge of the original terminal constructed in 1941. Deep foundation material would be expected to be present below this road since it originally acted as a bulkhead. In 1942, when terminal enlargement occurred, the area around Building 44D was hydraulically filled. Tank 19, located west of the northwest corner of Building 44D, was installed in 1945 when the

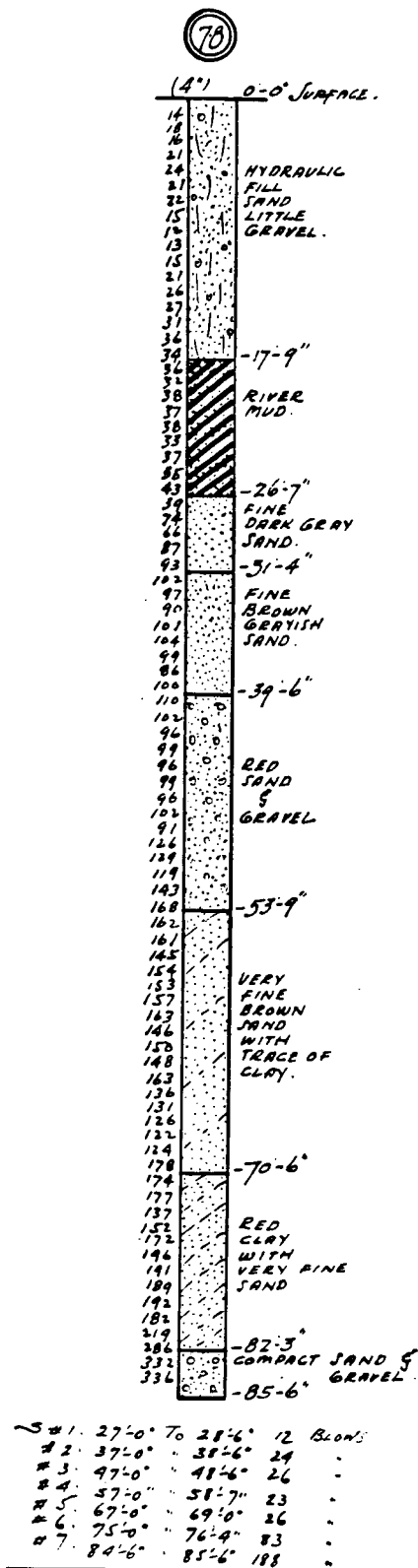
building was constructed. Tank 19 is located 400 feet south of the North Channel and 1,100 feet north of the South Channel. As one travels west through MOTBY, these five tanks are located midway along the terminal. The surface elevation of the tank locations is 13 feet msl.

Because tanks 7, 8, 9, 10, and 19 are fairly close to each other, it is expected that subsurface conditions beneath them are similar. As shown in Figure 2-5, exploratory borings were completed in this area in 1941 as part of foundation planning for MOTBY buildings (U.S. Navy, 1941). Boring 78 is the deepest of these borings and is believed to be representative of subsurface conditions in the area.

As shown in Figure 3-4, the total thickness of unconsolidated sediments in boring 78 is approximately 85.5 feet. Other logs for deep borings at MOTBY indicate that the compact sand and gravel below 82.25 feet is usually only a few feet thick and overlies bedrock. The first soil layer encountered below ground surface is approximately 18 feet of hydraulic sand fill. This overlies almost 9 feet of river mud, the sediment that marked the bay substrate prior to terminal construction. The next 27 feet consists of sand or sand and gravel layers. The 28.5 feet of sediment underlying this is either clayey sand or sandy clay. The lowermost unit is the compact sand and gravel mentioned above.

Groundwater in the vicinity of tanks 7, 8, 9, and 10 was investigated as part of a 1986 study of an underground storage tank located southwest of Building 44C (ERTEC, 1986). Groundwater was found to show some tidal influences and to have a water table elevation of approximately 7 feet msl, about 5 feet below ground surface. This would put the water table within the hydraulic sand fill underlying the site. The flow direction was generally southward toward the South Channel. Since the four tanks at Building 44E are situated closer to the North Channel than to the South Channel, the foundation material associated with Jersey Avenue may prevent the tidal influence of the North Channel from penetrating to this area. Tank 19 is located northwest of Jersey Avenue, and groundwater flow would be expected to be northward to the North Channel.

Tanks 16, 17, and 18 are located near the northeast corner of MOTBY in an area that was substantially dismantled and is now used only for bulk storage of shipping-related equipment. These three tanks are aligned north to south, with their axes trending east to west (Figure 2-7). They are located 180 feet south of



SOURCE: U. S. NAVY, 1941

FIGURE 3-4
BORING LOG 78
VICINITY OF TANKS 7, 8, 9, 10 AND 19
MOTBY, NEW JERSEY

the North Channel and 1,250 west of the East Channel. The tanks are in the original part of the terminal constructed in 1941. Present surface elevation is 13 feet msl.

An exploratory boring was completed approximately 120 feet north of these three tanks in 1965 (U.S. Navy, 1965). Boring 4N was completed to a depth of 51.5 feet, and this geologic profile would likely be similar to conditions below the tanks (Figure 3-5). Hydraulic sand fill accounts for 29.5 feet below the top 0.5-foot layer of asphalt. The thickness of hydraulic fill is about 10 feet greater than what exploratory borings performed in 1937 (prior to terminal construction) indicated as the depth to the top of river mud (City of Bayonne, 1937). This suggests that most of the river mud was washed away during the hydraulic filling of the terminal. Below the hydraulic sand fill is 9 feet of gray and brown silt with organics. The final 12.5 feet of boring 4N consists of brown sand. Based on deeper borings completed elsewhere at MOTBY (U.S. Navy, 1941), bedrock should be encountered at a depth of between 80 and 100 feet from the surface of the terminal.

Groundwater was encountered within the hydraulic sand interval at a depth of 8 feet during the drilling of boring 4N. The water table beneath tanks 16, 17, and 18 probably reacts rather rapidly to tidal changes.

Tanks 20, 21, and 22 are located at the southeast corner of MOTBY within the Hoboken Shipyards (Figure 2-2 and 2-9). The tanks are located 100 feet north of the South Channel and 160 feet west of the East Channel in the area known as Building 134C. This area of MOTBY is part of the original terminal constructed in 1941. The surface elevation of the tank area is 13 feet msl.

The subsurface geologic profile of this tank area was originally described in a boring completed at the southeast corner of the terminal as part of preconstruction explorations (City of Bayonne, 1937). Boring 11B, as presented in Figure 3-6, extended to -46.75 feet msl and reflects conditions prior to construction. Currently, if it is assumed that the mud was washed away during filling, hydraulic sand fill would be present to where the water and mud once extended--to -27.5 feet msl. It is probable that the underlying coarse sand, gravel, and clay sediments were not disturbed by filling and are still in place.

Casing Blows
per Foot

4N

El. 113.34 ← Elevation plus 100.00 Feet

W.L.
105.54

102	Asphalt	112.84
137		
68		
56		
50		108.34
27		1 6 68
33		
27		
23	Fill.	
22	Brown	103.34
23	Coarse to	2 5 55
26	Fine Sand	
15		
12		
14		98.34
15		3 1 21
17		
20		
25		
26		93.34
24		4 1 2
28		
32		
33		
36		88.34
41		5 1 11
43		
47		
42		
44		83.34
52	Brown Silt.	6 1 33
56	Layers of Grey	
80	Silt, Little	80.34
72	Fine Sand	
68	Dark Grey	78.34
73	Organic Silt,	7 2 12
94	Little Fine	
102	Sand, Trace	
103	Peat, Trace	
112	Shells	74.34
102		73.34
114		8 11 13, 3
130	Brown	
129	Coarse to	68.34
129	Fine Sand,	9 6 79
134	Little Silt.	
127		
126		
132		
136		63.34
		10 5 78 61.84

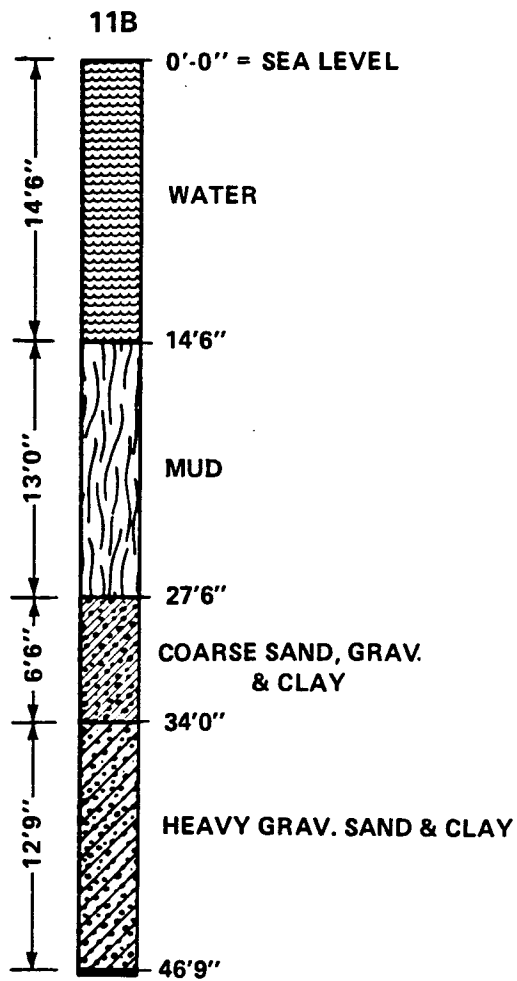
Blows per 6 Inches

SPT Sample

DRILLED 4/13/65

FIGURE 3-5
BORING LOG 4N VICINITY OF TANKS 16, 17, AND 18
MOTBY, NEW JERSEY

SOURCE: U.S. Navy, 1965.



NOTE: FIGURE REDRAWN FROM THE ORIGINAL
SOURCE: CITY OF BAYONNE, N. J., 1937

**FIGURE 3-6
BORING LOG 11B
VICINITY OF TANKS 20, 21 AND 22
MOTBY, NEW JERSEY**

It is likely that groundwater beneath the site reacts rapidly to tidal changes since the site is situated so close to the bay, and very permeable hydraulic fill underlies the tanks. Further, it is likely that there is complete mixing of site groundwater with bay water.

Tank 23 is located near the northeast corner of MOTBY within the Hoboken Shipyards (Figures 2-2 and 2-10). The tank is situated 600 feet south of the North Channel, 650 feet west of the East Channel, and 150 feet north of the drydock. The surface elevation of the tank site is 13 feet msl. This area of MOTBY is part of the original terminal constructed in 1941. Tank 23 is located approximately 150 feet south of Site 7, Building 105 Drum Storage Area.

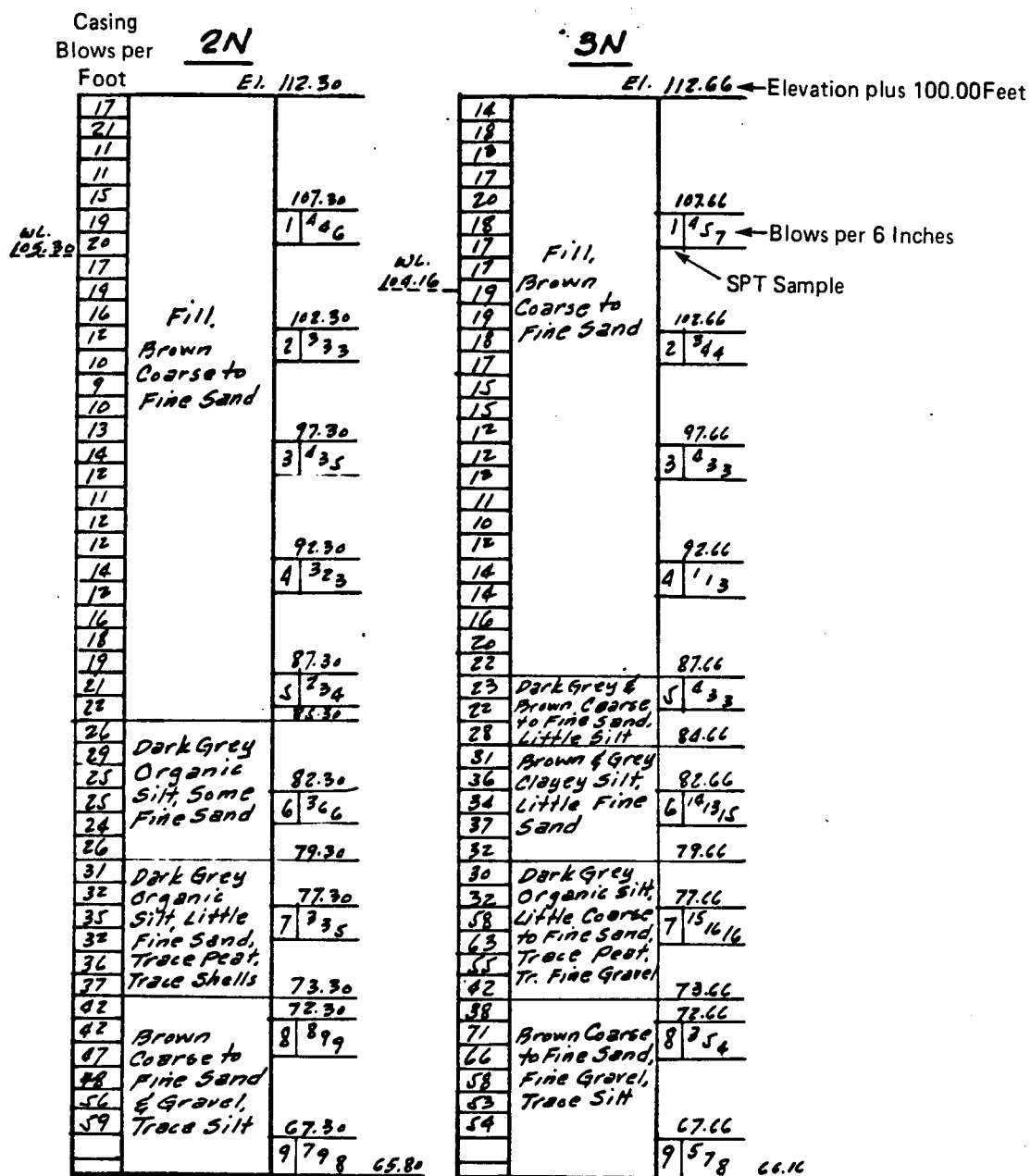
The subsurface geologic profile for this area was identified from boring logs of two exploratory borings completed in 1965 along the north bulkhead, each located approximately 500 feet from Tank 23 (U.S. Navy, 1965). Borings 2N and 3N (Figure 3-7) show approximately 25 feet of mixed sand fill present below this area of MOTBY. Below this sand fill is approximately 13 feet of dark gray or brown silt or organic silt. Underlying this silt is at least 8 feet of brown sand and gravel. Deeper borings located a few thousand feet west of this area indicated that bedrock would be encountered between 80 and 100 feet below the surface of the terminal.

During tank sampling for this RI, it was observed that water within the access dry well to the tank was approximately 8 feet below ground surface. The water was pumped out to facilitate tank inspection, but recharge to this dry well was almost instantaneous, suggesting direct connection to the shallow water table. This level would, therefore, reflect the unconfined water table at this site.

The coarse sand present at the water table and the proximity of the site to the bay and drydock suggest that the water table would be affected by tidal changes and fluctuate a couple of feet twice daily.

3.1.2.4 Site 4, DRMO Drum Storage Area. Site 4--a former RCRA Part A permit facility--is located in the DRMO salvage yard near the northwest corner of the improved secure areas of the MOTBY peninsula. The site is located near the western side of Area 204. The DRMO salvage yard is present in Area 203 and in the southern half of Area 204.

Site 4 is situated 600 feet south of the North Channel and 300 feet east of Site 1. An asphalt pavement covers hydraulic fill at the site and extends 400 feet



4/9/65

4/12/65

SOURCE: U. S. NAVY, 1965

FIGURE 3-7
BORING LOGS 2N AND 3N,
VICINITY OF TANK 23, SITE 6 AND SITE 7
MOTBY, NEW JERSEY

northward and 80 feet westward. The elevation of the site is 12 feet msl. The asphalt pavement was laid in the early 1970's, prior to use of the site as a RCRA facility.

Subsurface geologic conditions were inferred from completed borings located approximately 400 feet from the site. Borings DM-8, DM-10, and DM-11 (completed for the 1988 RI field program at Site 1) and borings completed in 1945 along the North Channel (U.S. Navy, 1945) provided pertinent geologic data, which indicate that approximately 30 feet of sandy hydraulic fill is present below the site. Occasional organic-rich layers may also be present within this fill, indicating periods when filling was discontinued. Below the fill is approximately 5 feet of organic-rich silt, reflecting the river bottom prior to construction. Boring data indicate that several layers of alternating sand, gravel, or clay are likely present at the site below this silt. Bedrock is at a depth of at least 75 to 100 feet below the site.

Based on available data, the groundwater table below Site 4 is approximately 5 to 6 feet beneath ground surface, at an elevation of approximately 7 feet msl. The water table may be influenced by tidal changes in the bay, but the 600-foot distance to the North Channel may be too great for significant fluctuations to occur at the site.

3.1.2.5 Site 5, Battery Acid Pit. Site 5 is located within Building 45, adjacent to the northern wall, approximately 200 feet east of the northwest corner and 100 feet south of the North Channel. As shown in Figure 2-13, the plugged pit is present within a small enclosed battery shop in Building 45. The floor elevation is estimated at 12.5 feet msl, based on existing utility maps for the area. Surface drainage is into a sanitary sewer drain located a few feet from the site.

This area of MOTBY was constructed in 1942 as part of the first expansion of the original terminal, which extended to Jersey Avenue just east of Building 45. Some filling of this area probably occurred in 1941.

The subsurface geologic profile for this site was identified from a boring completed in 1965 approximately 60 feet northeast of the pit (U.S. Navy, 1965), as shown in Figure 3-7. Boring 10N shows 14 feet of brown sand fill present below a 1-foot asphalt surface. Beneath this fill are 4 feet of gray sand, 7.5 feet of dark gray organic silt, and at least 16 feet of brown sand or silty sand (Figure 3-8).

Casing
Blows
per Foot

10N

El. 111.63

← Elevation plus 100.00 Feet

WL.
102.30

102	Asphalt	110.63
39		
26		
28		
27	Fill,	106.63
19	Brown Coarse	1 446
23	to Fine	
26	Sand,	
22		
21		101.63
16		2 345
19		
23		
22		97.63
23	Dark Grey	96.63
24	Coarse to Fine	3 433
29	Sand, Little	
29	Silt, Trace	
28	Gravel	93.63
37		
42	Dark Grey	91.63
41	Organic Silt,	4 111
52	Trace Peat,	
56	Little Fine	
37	Sand, Little	
32	Shells	86.63
41		5 778
41	Brown Med.	
43	to Fine Sand,	
50	Trace Grey	
50	Silt	82.63
52		81.63
49		6 181413
53	Brown Med.	
68	to Fine	
71	Sand	
73		76.63
67		7 131111
74		74.63
82	Brown Med.	
87	to Fine Sand,	
91	Trace Silt	71.63
		8 121112
		70.13

Blows per 6 Inches

SPT Sample

DRILLED 4/19/65

SOURCE: U.S. Navy, 1965.

FIGURE 3-8
BORING LOG 10N VICINITY OF SITE 5, BATTERY ACID PIT
MOTBY, NEW JERSEY

Groundwater was encountered at a depth of 9.3 feet when boring 10N was drilled in 1965, but at a depth of only 6.5 feet when soil sample 5SS2 was collected in 1988. Sample 5SS2 was taken less than 30 minutes after maximum high tide (USDC, 1986), indicating that tidal fluctuations of the groundwater table can be quite pronounced below the site, possibly exceeding 3 feet.

3.1.2.6 Site 6, PCB Spill Area. Site 6 is located near the northeastern corner of the installation, 400 feet south of the North Channel, 700 feet west of the East Channel, and 300 feet north of the drydock. This area is part of the original terminal constructed in 1941.

The site is located immediately north of the central area of Building 105 within an open-top but walled transformer area accessible only from Building 105. The western half of this area houses two older PCB transformers, and the eastern half houses two new non-PCB transformers. A leaking PCB transformer was removed from the eastern half of the area. Shop Street is located just north of the transformer area. The surface of the site is flat and covered with 2 feet of gravel. No exit for surface drainage was visible, suggesting that percolation into the subsurface is the drainage mechanism.

The subsurface geologic profile for this area was identified from logs of two exploratory borings drilled in 1965 along the north bulkhead, each located less than 400 feet from Site 6 (U.S. Navy, 1965). Borings 2N and 3N (Figure 3-7) show approximately 25 feet of mixed sand fill present below the northeastern corner of MOTBY. Approximately 13 feet of dark gray or brown silt or organic silt is located below the sand fill. At least 8 feet of brown sand and gravel is present below the silt. Based on deep borings completed elsewhere at MOTBY, it is expected that bedrock would be encountered between 80 and 100 feet below ground surface.

Although site-specific data are not available, data from areas nearby suggest that the groundwater table at Site 6 is probably from 6 to 8 feet below the surface. Sand fill found at this depth and the proximity of the site to the bay suggest that tidal influences would result in fluctuations of the water table twice daily.

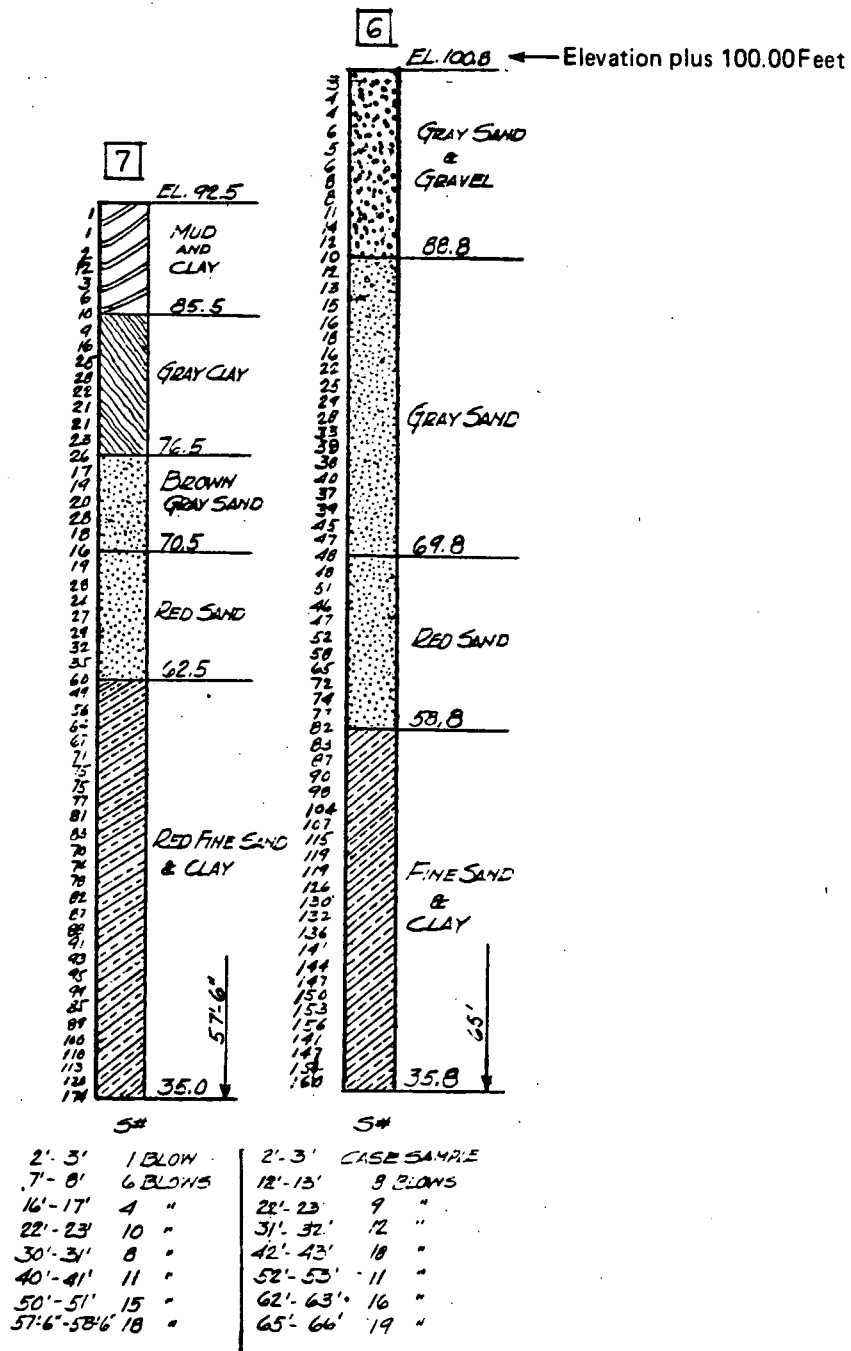
3.1.2.7 Site 7, Building 105 Drum Storage Area. Site 7 is located near the northeast corner of the peninsula, 400 feet south of the North Channel, 650 feet west of the East Channel, and 300 feet north of the drydock. This area is part of the original terminal constructed in 1941.

The site is situated immediately east of the northeast corner of Building 105, south of Shop Street and northwest of the fence bordering the Hoboken Shipyards (Figure 2-14). It is located on flat ground, with roughly half the site underlain by asphalt and half by sand fill. Sand fill is also present under the asphalt. Surface elevation is approximately 13 feet msl.

The subsurface geologic profile for this area was identified from logs of two exploratory borings completed in 1965 along the north bulkhead, each located approximately 350 feet from Site 7 (U.S. Navy, 1965). Borings 2N and 3N (Figure 3-7) show approximately 25 feet of mixed sand fill present below this area of MOTBY. Below this sand fill is approximately 13 feet of dark gray or brown silt or organic silt. Underlying the silt is at least 8 feet of brown sand and gravel. Deeper borings (i.e., boring 78, Figure 3-4) located a few thousand feet west of Site 7 indicate that bedrock would be found between 80 and 100 feet below land surface. Groundwater was not encountered during soil sampling at Site 7; therefore, it is known to be at least below 6 feet but probably not much deeper. The coarse sand present at the water table and the proximity of the site to the bay suggest that the water table would be affected by tidal changes and fluctuate a couple of feet twice daily.

3.1.2.8 Site 8, Fire Training Area. Site 8 is located within the northeast quadrant of open storage Area 85, approximately 60 to 140 feet south of the unimproved shoreline of the North Channel. No bulkheads are present along the shoreline, and ground surface elevation ranges from 12 feet msl at the site to sea level at the shoreline. Area 85 was an unimproved dredged soil storage area until the early 1970's when a parking lot was expanded and the southern half of Area 85 was covered with asphalt. The remainder of Area 85, the northern half including Site 8, was covered with gravel (Figure 2-15).

Filling of this area of MOTBY was substantially completed by 1944. Minor grading and filling continued until the early 1970's when the final improvements were completed. The subsurface geologic profile for this site was characterized from two logs of exploratory borings completed in 1945 along the shoreline, 400 feet west and 400 feet east of the site (U.S. Navy, 1945). Each boring (#6 east of Site 8, and #7 west of Site 8) penetrated to an elevation of -65 feet msl (Figure 3-9). With the surface elevation of the site estimated at 12 feet msl, up to 25 feet of sand and gravel hydraulic fill would be expected to be below the site.



SOURCE: U.S. NAVY, 1945.

FIGURE 3-9
BORING LOGS 6 AND 7
VICINITY OF SITE 8, FIRE TRAINING AREA
MOTBY, NEW JERSEY

Underlying the fill is approximately 20 additional feet of natural brown or gray sand. The next layer is approximately 10 feet of red sand. From -40 feet msl to the boring completion depth (-65 feet msl), a red fine sand and clay layer is present. Based on deeper borings drilled elsewhere at MOTBY (Figure 3-4), bedrock at the site would be expected to be found between -70 and -90 feet msl, or 80 to 100 feet below the site.

During sampling for the 1988 RI field program, the groundwater table was not encountered at the site. Samples were collected to a maximum depth of 5.0 feet. The water table is assumed to be present at a depth from 6 to 8 feet. Considering the close proximity of the site to the North Channel, fluctuations of the water table due to tidal influence would be expected.

3.1.3 Groundwater Conditions

Groundwater conditions at MOTBY were directly evaluated for only two of the sites investigated as part of this RI--Sites 1 and 2 at the westernmost area of the terminal. Thirteen monitoring wells were installed for the evaluation of Sites 1 (Landfill) and 2 (Former Naval Storage Area); nine of these wells were installed to intercept the shallow unconfined water table, and three additional wells were installed deeper (to 50 feet) to evaluate more confined groundwater. Auger refusal was encountered in a fourth deep well boring (DM-4C) at a depth of 23.4 feet, and the resulting monitoring well may not be screened in soils equivalent to the other three deep wells. Aquifer characterization tests consisted of rising head (slug) tests on four wells and continuous 3- to 5-day monitoring of water levels on five wells. The results of these tests are presented in Section 4.2.5.

The only other known groundwater study performed at MOTBY consisted of an underground storage tank evaluation conducted in 1986 for the area southwest of Building 44C (ERTEC, 1986). Some data from this report were relevant for an evaluation of four of the Site 3 tanks located at Building 44E, but the subject of the 1986 report was an active facility that is not part of this RI.

The following sections describe groundwater conditions for two hydrologically distinct areas of MOTBY--the westernmost portion, which abuts Bayonne and underlies Site 1 and Site 2; and the terminal area between the North and South Channels in which the other sites are located.

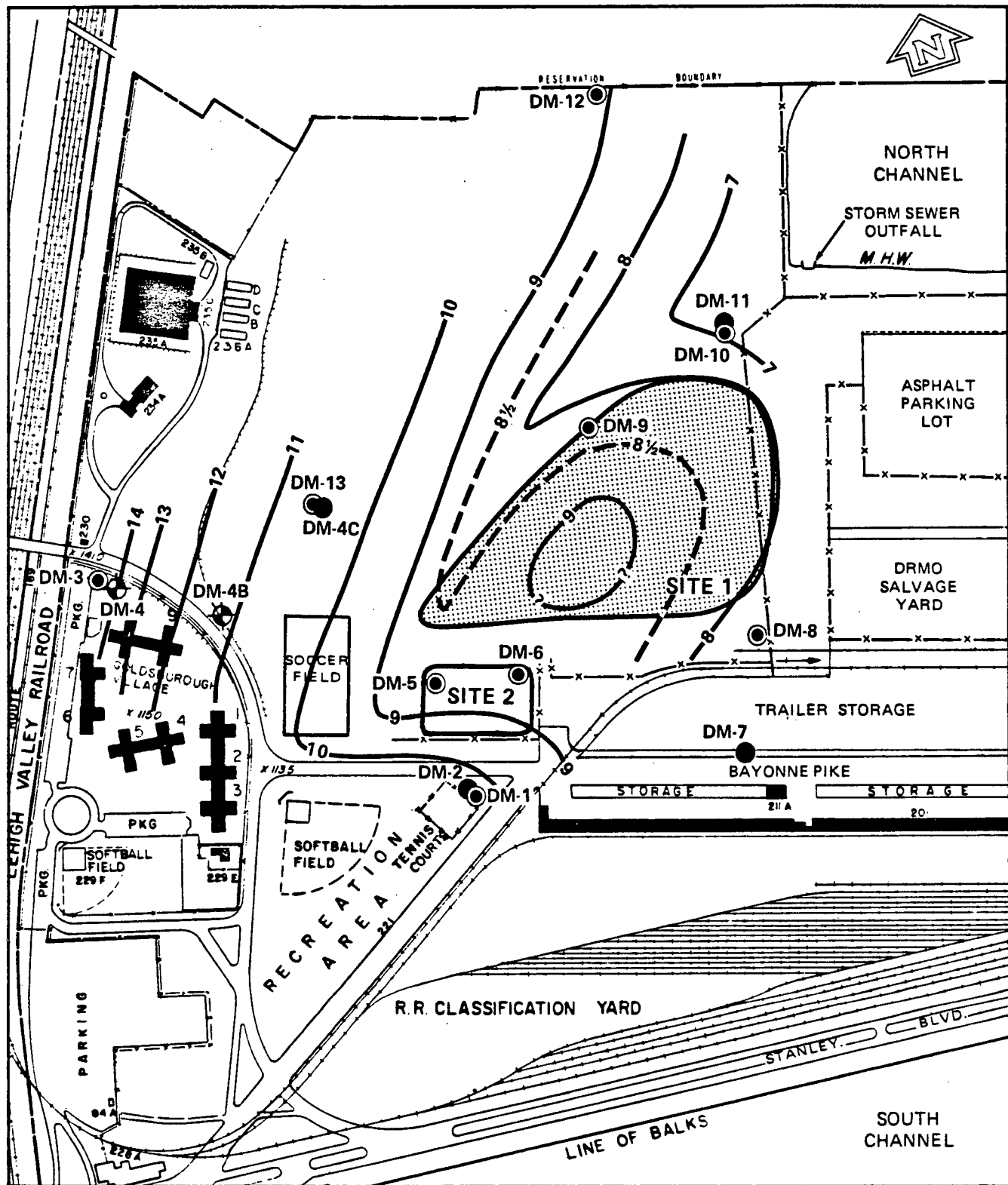
3.1.3.1 Site 1, Landfill, and Site 2, Former Naval Storage Area. Sites 1 and 2 are located from 1,000 to 2,000 feet from the western boundary of MOTBY. Shallow

groundwater at these sites exhibits the most complicated patterns found at MOTBY. The loose and highly porous fill at Site 1 also provides additional groundwater storage capacity, resulting in a groundwater mound due to the infiltration of precipitation.

Two hydrologically distinct aquifers were identified as existing below the western end of MOTBY--a shallow unconfined aquifer with a water table usually less than 3 feet below ground surface, and a deeper confined aquifer with a potentiometric surface several feet below the unconfined water table. As discussed in Section 4.3.5, the shallow water table does not appear to be influenced by tidal actions. The organic silt mud layers underlying the shallow aquifer are generally positioned at sea level and apparently act as a barrier to prevent the tides from affecting the unconfined water table. Monitoring of the deeper aquifer indicated daily fluctuations of the potentiometric surface coincident with the tides. This indicates that the deeper water is hydraulically in communication with the bay water, probably due to the periodic dredging of the North and South Channels when any river mud that could act as a barrier was likely removed. The deeper soils were deposited by glacial action (Section 3.1.2) and are predominantly coarse sand and gravel--textures that react quickly to aquifer recharge or discharge (e.g., tidal changes).

The shallow unconfined aquifer underlying the westernmost end of MOTBY exhibits a simple flow pattern, with groundwater flow generally eastward toward the Upper New York Bay via either the North or South Channels. Once the groundwater moves more than 500 feet from the western boundary, flow patterns become disrupted by the peninsula, with flow diverging either northeastward toward the North Channel or southeastward toward the South Channel. Below areas of MOTBY that are situated more than 2,000 feet from the western boundary, the shallow flow direction becomes generally perpendicular to the axis of the peninsula.

Groundwater elevation data from two time periods--January and August 1988--were evaluated. These months were characterized by very wet weather and very dry weather, respectively. As shown in Figure 3-10, the shallow groundwater table exhibited a mound below Site 1 that was approximately 1 foot higher than expected if a consistent decreasing water table was maintained until discharge into the bay waters. The shallow groundwater flow pattern identified during August



LEGEND:

- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- ⊕ SOIL BORING
- 8- WATER TABLE ELEVATION (FEET MSL)

0 400 Feet
SCALE

FIGURE 3-10
SHALLOW AQUIFER WATER TABLE
JANUARY 1988
SITE 1. LANDFILL AND VICINITY
MOTBY, NEW JERSEY

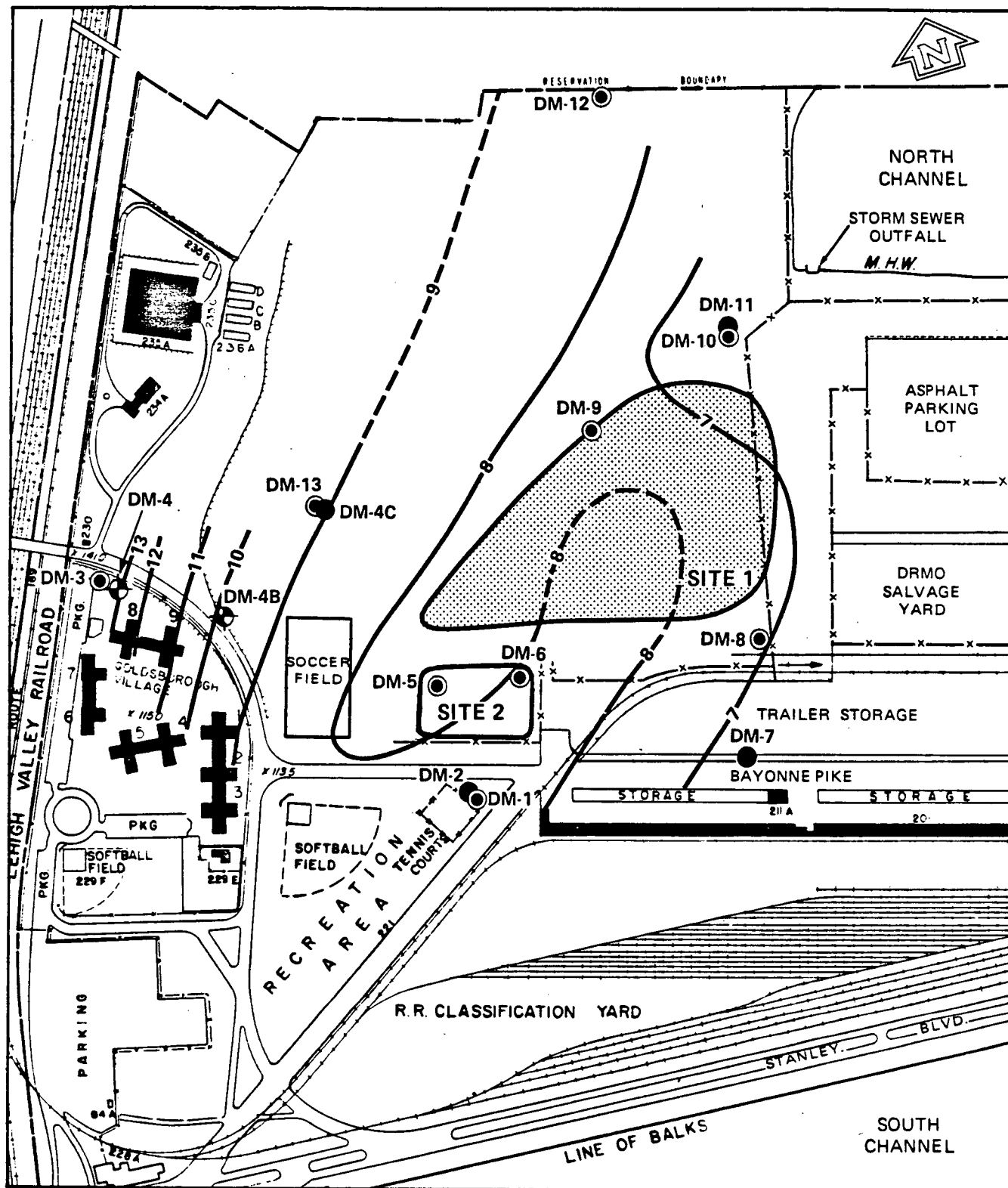
BASE MAP SOURCE: MOTBY Master
Plant, General Site Map, 1982.

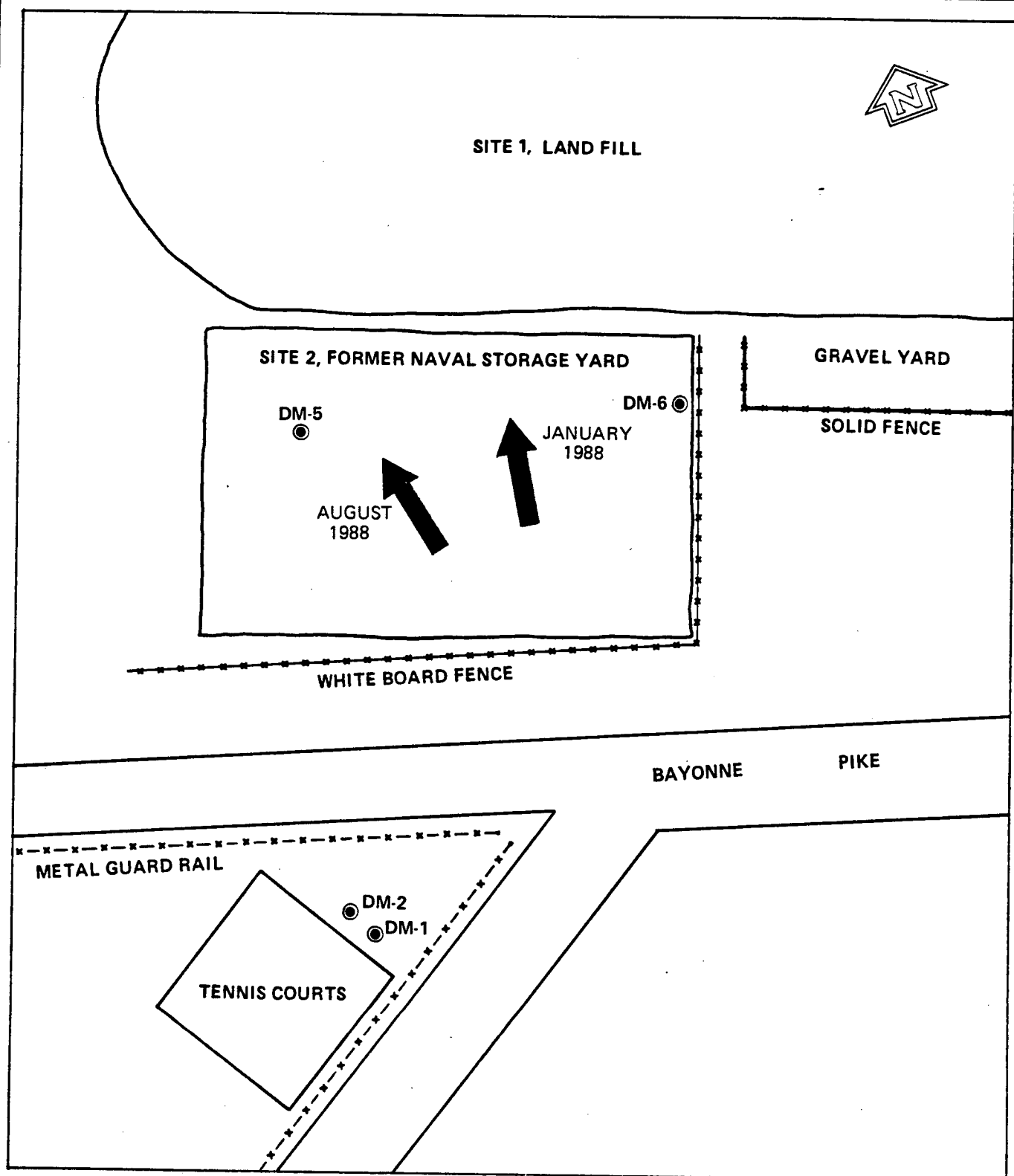
(Figure 3-11) also exhibited a slight groundwater mound centered at Site 1, but it was much smaller and less well defined than the mound detected in January. This indicates that, in the absence of significant precipitation for recharge, the water trapped within the Site 1 fill will discharge into the surrounding aquifer, allowing for a return to almost normal flow conditions. The overall water table elevation in January was approximately 1 foot higher than in August. In January, a significant amount of standing water was observed west of Site 1, indicating that the water table elevation was roughly equal to the ground surface elevation. No standing water was present near Site 1 in August.

Interpretation of the groundwater flow pattern between the wells shows a radial discharge of Site 1 groundwater. This groundwater apparently joins the simple flow pattern away from Site 1, eventually resulting in discharge into the North Channel. Some groundwater beneath Site 1 may flow southeastward to the South Channel, but a historical evaluation of the landfill (USEPA, 1987) and interviews with MOTBY personnel indicated that the sanitary waste was placed within the northwestern half of the landfill, the area where groundwater flows to the North Channel. Analytical results from groundwater samples taken from monitoring wells DM-9 and DM-10 would be representative of the concentrations of potential site contaminants migrating to the North Channel. Data derived from the groundwater sample taken from monitoring well DM-8 would be indicative of potential contaminants migrating to the South Channel from Site 1.

Four of the 13 monitoring wells were positioned for evaluation of Site 2 and its potential influence on Site 1. Three of these wells were screened at the depth of the shallow unconfined water table, and one well (DM-2) was screened into the deeper confined aquifer. Monitoring well DM-1 acts as an upgradient well, and wells DM-5 and DM-6 are both located downgradient of Site 2. The shallow unconfined groundwater flow direction is generally northward through Site 2 as it heads to the west side of Site 1, as shown in Figure 3-12. The groundwater mound present beneath Site 1 causes the flow from Site 2 to be diverted to the west side of the landfill on its way to eventual discharge into the North Channel.

3.1.3.2 Other Site Areas at MOTBY. Site areas located farther out on the peninsula (Sites 3, 4, 5, 6, 7, and 8) share similar hydrogeologic properties related to the manmade character of the terminal. The areas between the North and South Channels, approximately 2,000 feet or more from the western boundary, are





LEGEND:

- MONITORING WELL
- ➔ FLOW DIRECTION

0 100 FEET
SCALE

Source: Modified from MOTBY Master Plan,
General Site Map, 1982.

FIGURE 3-12
SHALLOW AQUIFER FLOW DIRECTION
SITE 2, FORMER NAVAL STORAGE YARD
MOTBY, NEW JERSEY

3-25

Dames & Moore

underlain by coarse sand hydraulic fill and/or coarse rubble. The sand and rubble have very high permeabilities, allowing for the rapid transmission of groundwater and noticeable fluctuations of the water table due to tidal changes. These materials, which extend for up to 25 feet below sea level (Figure 3-3), contain an aquifer that is greatly affected by the tides. Foundation engineering borings drilled throughout the peninsula (U.S. Navy, 1941; 1945; 1965) show many places where the confining river mud below the fill has been greatly disturbed and is even missing. This destruction of the river mud--the likely result of hydraulic filling--would effectively combine the two aquifers at the western end of MOTBY into one aquifer under the peninsula. The vast majority of water in this aquifer originates from the infiltration of bay water. This lateral infiltration is likely to be far greater than any vertical infiltration of precipitation since the ground surface of MOTBY is largely covered with pavement or buildings.

The foundation of the terminal consists of both hydraulic sand fill removed from the channels adjacent to MOTBY and coarse rubble used as a stabilizer for the sand fill. A strip of rubble about 50 feet wide extends from the bulkheads inward. Inside this rubble is mostly sand fill. Flow patterns of the discharging aquifer during low tide would generally be perpendicular to the axis of the peninsula, but subsurface structures such as foundation pylons will cause unpredictable flow around the structures. The greater the distance from the bulkheads, the less tidal influence would be expected; however, no part of the peninsula (farther than 2,000 feet from the western boundary of the terminal) can be considered as having an aquifer with either a predictable or consistent flow direction, gradient, or velocity.

3.1.4 Surface Water Drainage

A detailed discussion of surface drainage is unnecessary because of the near sea-level elevation of MOTBY, the manmade character of the terminal, and the proximity of MOTBY to major rivers and bays, as well as to the Atlantic Ocean. The information presented below was taken from the 1980 Installation Assessment (USATHAMA, 1980).

Major drainage in northeastern New Jersey includes the Elizabeth River, which flows into the Arthur Kill just south of Newark Bay; the Passaic and Hackensack Rivers, which empty into Newark Bay near Jersey City; and the

Hudson River, which flows into the Upper New York Bay. The East River and Hudson River merge at the north end of the Upper New York Bay near the southern tip of Manhattan Island. The area that extends northward from the Narrows between Staten Island and Brooklyn to just north of Bear Mountain (opposite Beacon, New York) on the Hudson River is referred to as the Hudson Estuary.

Daily tidal fluctuations during August 1988 ranged from 2.2 to 6.6 feet (USDC, 1986).

Surface drainage on MOTBY, except for the Goldsborough Village, is for the most part collected in the storm sewer system and discharged into the Upper New York Bay through a number of outfalls. Drainage from the northwest corner of the terminal is via open ditches and storm drain pipes into the bay along the north side of the terminal. This part of the installation contains a septic tank, leach field and drain lines, the large landfill area, part of the open storage area, and a small marsh.

3.2 FLORA AND FAUNA

Since MOTBY is a manmade peninsula, the existing vegetation on the terminal is a result of cultivation, and wildlife is limited due to the establishment of a primarily urban/industrial setting.

Most of the cultivated lawn grasses and ornamental shrubs and trees are scattered around the housing complexes and recreational areas at the western end of the terminal. Common trees found at MOTBY include maple, spruce, poplar, aspen, oak, weeping willow, common sassafras, hemlock, locust, and pine (USATHAMA, 1980).

Prior to 1972, a manmade salt marsh within MOTBY included nearly 59 acres of wetlands. Continuous filling of the area with dredge materials (hydraulic fill) resulted in significant shrinkage of the marsh. In 1975, hydraulic sand fill was deposited along the northern edge of MOTBY adjacent to Site 1, thereby sealing off the channel tidal flow and eliminating most of the marsh (USATHAMA, 1980). Despite deposition of the fill, a limited marsh area within Site 1 has supported a population of reedgrass and occasional cattails.

Wildlife species at MOTBY are limited to those that commonly occur within urbanized areas in the region. Reportedly, the most common is the Norway rat (USATHAMA, 1980); cottontail rabbits are also occasionally sighted.

A biological survey completed as part of the 1980 Installation Assessment (USATHAMA, 1980) reported the avian community to be represented primarily by gulls--with the herring gull, ring-billed gull, and great black-backed gull dominating the population. Along the shoreline, terns, black ducks, mallard ducks, and snowy egrets have been observed. Other species--including killdeer, red-winged blackbirds, and American bittern--have been found in the marsh areas.

There are no known occurrences of endangered species at MOTBY; the occurrence of such species is unlikely given the urban environment of the terminal. Of the eight sites investigated as part of this RI, only Sites 1 and 2 support a vegetative cover, which consists of a small area of marsh environment, scattered trees, and scrub grasses. The remaining sites are covered with gravel, asphalt, or concrete.

3.3 LAND USE

MOTBY, as a manmade peninsula, is by definition surrounded on three sides by water. The terminal extends into the Upper New York Bay, with the water along the northern boundary known as the North Channel. The City of Bayonne bounds MOTBY on the western side. Adjacent to the northwestern boundary are the industrial activities of Global Industries. Separating the terminal from the City of Bayonne are the Conrail system and two major thoroughfares that feed the New Jersey Turnpike. The first community beyond the roadways is primarily single-family residential, interspersed with small commercial establishments.

The majority of the terminal itself is industrial, with operations conducted by a number of independent contractors. The western end of the terminal is primarily residential and consists of both multistory apartment buildings and single-family housing. Goldsboro Village consists of 125 apartments with approximately 440 residents. Individual housing north of Goldsboro Village consists of the commander's house, a guest house, and four trailers--with a total of less than 10 residents.

4.0 SITE INVESTIGATION PROGRAM

4.1 OVERVIEW

This section presents approaches and procedures for the field program and geotechnical/physical results of the RI program. The site investigation work plan, developed prior to the conduct of fieldwork, outlined the technical approach and procedures appropriate for evaluating the potential for contamination at each of the eight sites of concern (USATHAMA, 1988). The site investigation program was designed to investigate both the history of the area (through aerial photographic review and interpretation) and present site conditions (through exploratory borings and wells, aquifer testing, and collection of environmental samples). A summary of RI activities completed at the eight sites is presented in Table 4-1.

Fifteen soil borings were drilled following a geophysical survey. Monitoring wells were installed in 13 of the soil borings, including nine shallow water table wells and four deeper wells. The other two borings were drilled for subsurface characterization and abandoned due to the encountering of shallow bedrock or auger refusal. After completion of the boring and monitoring well program, aquifer tests were performed on four of the wells to determine aquifer characteristics. Wells used to characterize the aquifer were selected based on their ability to supply data representative of the site hydrology.

Near-surface soil samples (soil immediately below any surface gravel, concrete, or asphalt) and soil a few feet deep were collected from potential contamination sources that had been identified from site history, aerial photographic interpretation, or visual site inspection. Surface water and sediment sampling locations were selected to determine the potential for contaminant migration via surface runoff.

The following sections explain in detail the specific field efforts, investigation methodologies, and geotechnical results. Results of the collection and analysis of environmental samples are presented in Section 5.0.

4.2 SITE-SPECIFIC INVESTIGATIONS

The proximity of Sites 1 and 2, as well as the unique hydrogeologic conditions of the manmade peninsula, required the installation of an integrated groundwater monitoring network covering both sites and most of the western end of MOTBY. Therefore, the following discussion relates to both Sites 1 and 2. Additional data are presented in Sections 4.2.1 and 4.2.2.

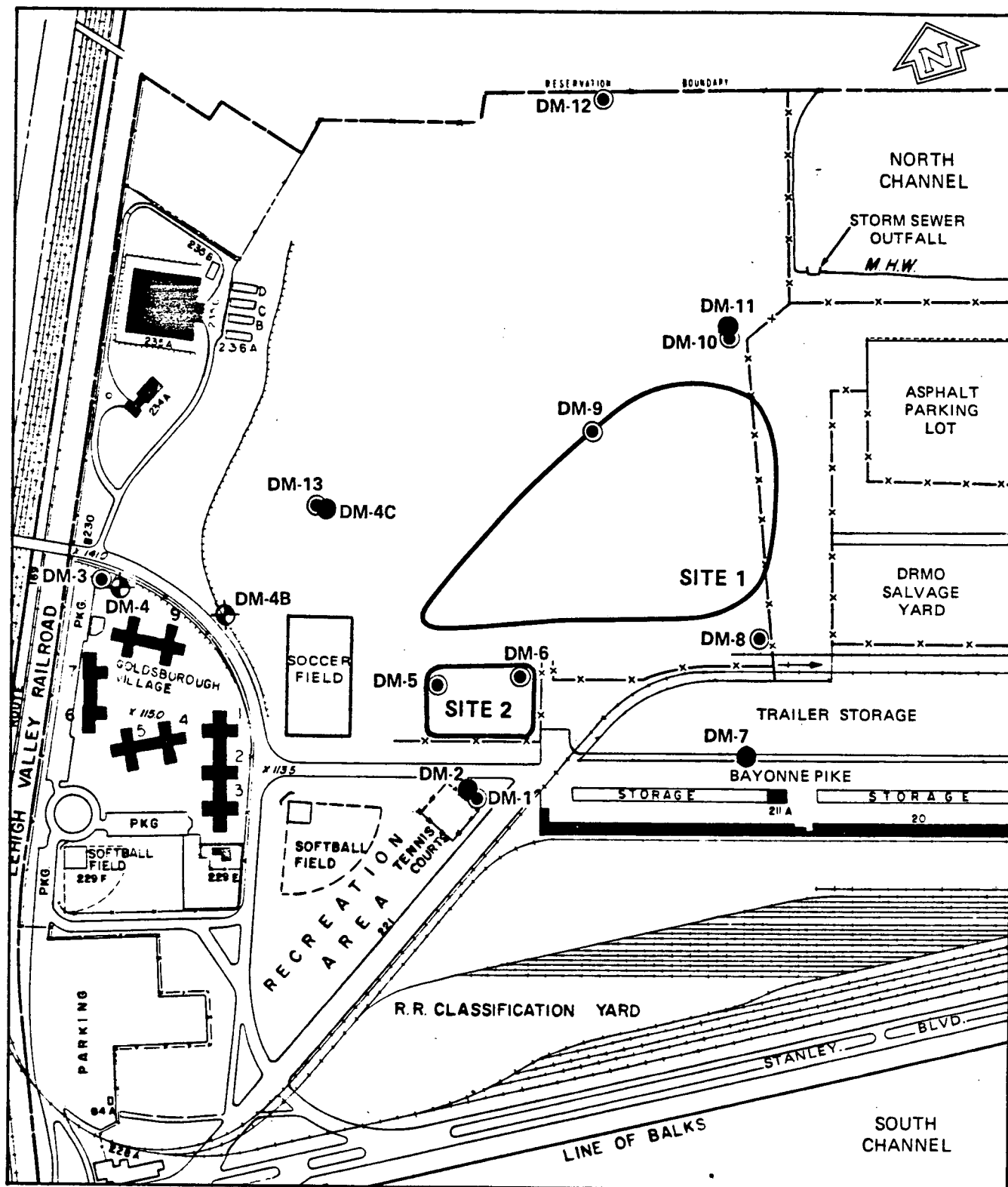
TABLE 4-1
Summary of RI Field Investigations
MOTBY, New Jersey

Task	Site 1 Landfill	Site 2 Former Naval Storage Area	Site 3 Underground Storage Tanks	Site 4 DRMO Drum Storage Area	Background
Aerial photo review	----- Entire Area -----				
Geophysical survey	7-acre area	--	--	--	--
Borings/monitoring wells	DM-7, DM-8, DM-9, DM-10 DM-11, DM-12	DM-1, DM-2, DM-5, DM-6	Review of Existing Well Data	--	DM-3, DM-4
Physical testing	--	DM-7	--	--	--
Slug tests	DM-2, DM-7	DM-5, DM-6	--	--	--
Continuous water level monitoring	DM-10, DM-11	DM-1, DM-2, DM-6	--	--	--
Groundwater sampling	DM-4C, DM-7 DM-8, DM-9 DM-10, DM-11 DM-12, DM-13	DM-1, DM-2, DM-5, DM-6	--	--	DM-3
Surface water sampling	1SW2, 1SW3, 1SW4	--	--	--	1SW1
Soil sampling	--	2SS2, 2SS3, 2SS4, 2SS5, 2SS6	--	4SS1, 4SS2, 4SS3, 4SS4, 4SS5, 4SS6	2SS1 9SS1(a)
Sediment sampling	1SE2, 1SE3, 1SE4	--	--	--	1SE1
Tank sampling	--	--	3T7, 3T9, 3T10, 3T16, 3T17, 3T18, 3T19, 3T20, 3T21, 3T22, 3T23	--	--
	Site 5 Battery Acid Pit	Site 6 PCB Spill Area	Site 7 Bldg 105 Drum Storage Area	Site 8 Fire Training Area	
Aerial photo review	----- Entire Area -----				
Geophysical survey	--	--	--	--	
Borings/monitoring wells	--	--	--	--	
Physical testing	--	--	--	--	
Slug tests	--	--	--	--	
Continuous water level monitoring	--	--	--	--	
Groundwater sampling	--	--	--	--	
Surface water sampling	--	--	--	--	
Soil sampling	5SS1, 5SS2	6SS1, 6SS2, 6SS3, 6SS4	7SS1A, 7SS1B, 7SS2A, 7SS2B, 7SS3	8SS1, 8SS2, 8SS3, 8SS4, 8SS5	
Sediment sampling	5SE1	--	--	--	
Tank sampling	--	--	--	--	

^aSingle sample collected from vicinity of Building 103.

Figure 4-1 shows the locations of 15 borings completed at Sites 1 and 2. Monitoring wells were installed in 13 of these borings--nine to sample the shallow water table (less than 20 feet) and four to sample deeper water. Three deep wells were completed to 50 feet, with one deep well installed to 22 feet. The wells and the rationale for their location are listed below:

- Paired wells DM-1 and DM-2--considered as background wells for Site 1, Landfill, and Site 2, Former Naval Storage Area.
- Well DM-3--installed to determine background water quality in the shallow aquifer as it enters the terminal from the City of Bayonne.
- Well DM-4C--installed to determine background water quality in the deeper aquifer west of Site 1. Available data suggest that well DM-4C may be located atop a sunken barge, and refusal is not indicative of bedrock conditions. Borings DM-4 and DM-4B were abandoned due to shallow auger refusal.
- Wells DM-5 and DM-6--located to separate potential effects of Site 1 and Site 2 on groundwater quality.
- Well DM-7--located to indicate the potential for contaminant migration within the deeper aquifer toward Staten Island in response to a recommendation by the State of New Jersey.
- Well DM-8--installed to evaluate whether tidal influences provide the potential for contaminant migration in a direction other than the expected downgradient direction toward the North Channel.
- Well DM-9--installed to indicate whether contaminant migration is occurring from the landfill into the shallow aquifer. If the landfill is affecting the shallow portion of the aquifer, well DM-9 is likely the most important well for contaminant detection.
- Paired wells DM-10 and DM-11--installed to evaluate the water quality of the shallow and deeper portions of the aquifer, respectively, as it exits the installation property.
- Well DM-12--installed to evaluate whether groundwater and related contaminants are exiting or entering the terminal along the north boundary.



LEGEND:

- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- ⊕ SOIL BORING

BASE MAP SOURCE: MOTBY Master Plan,
General Site Map, 1982.



FIGURE 4-1
RI BORING AND MONITORING WELL PROGRAM
MOTBY, NEW JERSEY

- Well DM-13--considered useful for evaluating whether contaminants from the landfill are migrating westward. Well DM-13 is paired with well DM-4C.

All of the paired wells were installed to investigate both the shallow groundwater that ultimately enters the surrounding water bodies and the deeper aquifer water that could potentially flow into or beneath the channels and contaminate groundwater supplies in other areas. Water level measurements in the paired wells were collected to evaluate the effects of tidal fluxes on both near-surface and deeper water within the aquifer. The drilling and installation of monitoring wells were phased, to the extent possible, and water level data were collected to attempt to verify upgradient and downgradient directions prior to the installation of all 13 wells.

4.2.1 Site 1, Landfill

Prior to the geophysical survey, aerial photographic analyses (USEPA, 1987c) were used to locate approximate landfill boundaries, and a 100-foot grid was laid out over the approximate 7-acre area by a professional land surveyor licensed by the State of New Jersey. A magnetometer was used in performing the geophysical survey to define the exact boundaries of the landfill. The results of the geophysical survey are discussed in Section 4.3.1.

As discussed in the preceding section, six shallow groundwater monitoring wells (DM-5, DM-6, DM-8, DM-9, DM-10, and DM-13) were installed just outside the located boundaries of the landfill. The screened interval at each well was positioned to intersect the water table under all expected conditions (i.e., tidal fluctuations). Maximum depth was 20 feet.

Two deep wells (DM-7 and DM-11) were positioned at locations expected to be generally downgradient of the landfill, assuming discharge was to both the North and South Channels. They were completed to depths of 50 and 45 feet, respectively. A shallow well (DM-12) was placed north of the landfill at the installation boundary to evaluate conditions as groundwater exits or enters the terminal.

Monitoring wells DM-2, DM-5, DM-6, and DM-7 were subjected to slug tests, as discussed in Section 4.3.5.1, to define the hydrologic characteristics of the aquifer at the site. Continuous water level recordings over an approximate 3-day

period occurred at wells DM-1, DM-2, DM-6, DM-10, and DM-11. Monitoring well construction details for the 13 wells are provided in Table 4-2.

Four surface water/sediment samples were collected at Site 1. Surface water/sediment samples ISW1/ISE1 were collected to represent background conditions. This sample location is situated west and generally upgradient of Site 1. Samples ISW2/ISE2 were collected from a pool of water at the northwest corner of Site 1. Samples ISW3/ISE3 were collected from a spring located at the northeast corner of Site 1; the spring was thought to flow through or originate from the landfill. Samples ISW4/ISE4 were collected from the storm sewer that parallels the eastern boundary of the landfill as it exits into the North Channel, as shown in Figure 2-3. These four sample locations were the only places at or near Site 1 that contained surface water/sediment with the potential to impact or be impacted by Site 1.

4.2.2 Site 2, Former Naval Storage Area

The approximate boundaries of Site 2 were identified through a review of aerial photographic data (USEPA, 1987c). Two shallow monitoring wells (DM-5 and DM-6), 20 feet deep, were placed just within the northern boundary of the site (Figure 2-3). The wells were placed hydraulically downgradient of Site 2 and upgradient of Site 1. Two wells, a shallow (DM-1) and deep (DM-2) pair, were placed south of the site to act as upgradient sampling points. Another shallow (DM-3) well was installed west of the site at the installation boundary to act as a shallow background groundwater sampling location for MOTBY. A soil sample (2SS1) taken from 0 to 3 feet below ground surface was collected in the immediate area of DM-3 and analyzed as a background soil sample. Because the peninsula is manmade and is composed primarily of fill, it is difficult to evaluate whether 2SS1 is representative of "background" conditions. In addition, soil samples (2SS2 through 2SS6) were collected from five other locations within the site and submitted for chemical analysis. Samples were collected from areas exhibiting visible evidence of spills or soil staining and from areas topographically downslope where runoff might collect. An undisturbed soil sample from boring DM-7 was collected and submitted for laboratory permeability testing and related analyses. Monitoring wells DM-2, DM-5, and DM-6 were subjected to slug tests to define the hydrologic characteristics of the aquifer. Continuous water level recordings over an approximate 3-day period occurred at wells DM-1, DM-2, and DM-6. A summary of the boring/monitoring well program is provided in Table 4-1.

TABLE 4-2

Monitoring Well Construction Details
MOTBY, New Jersey

Monitoring Well	Completion Date	Total Boring Depth (feet)	Well Depth (feet)	Screen Material ^a	Elevation of Screened Interval (feet) ^b	Filter Sand Pack Depth (feet) ^c	Casing Stickup (feet) ^d	Protective Casing Stickup (feet) ^d
DM 1	12/18/87	15.0	14.4	4 in/PVC	7.3--2.6	4.5	2.16	2.34
DM 2	12/17/87	50.0	46.4	4 in/PVC	-29.3--34.7	39.9	3.14	3.33
DM 3	01/20/88	15.0	14.3	4 in/PVC	16.7-6.7	4.3	2.37	2.37
DM 4C	01/21/88	23.4	23.4	4 in/PVC	-10.3--12.3	19.0	2.28	2.48
DM 5	12/22/87	16.5	14.4	4 in/PVC	7.4--2.5	4.5	2.13	2.37
DM 6	12/22/87	17.0	14.4	4 in/PVC	7.4--2.5	4.5	2.39	2.60
DM 7	01/06/88	50.0	48.9	4 in/PVC	-30.6--35.6	39.0	2.46	2.64
DM 8	12/21/87	16.5	14.4	4 in/PVC	6.7--3.2	4.5	2.27	2.50
DM 9	01/11/88	16.5	14.5	4 in/PVC	7.1--2.9	4.5	2.22	2.41
DM 10	01/14/88	15.0	14.0	4 in/PVC	6.5--3.5	4.0	3.00	3.20
DM 11	01/12/88	45.0	42.7	4 in/PVC	-27.1--32.1	33.0	2.85	3.06
DM 12	01/19/88	16.5	14.5	4 in/PVC	11.0-1.0	4.3	2.03	2.25
DM 13	01/15/88	16.5	14.8	4 in/PVC	6.5--3.5	4.0	2.12	2.34

^aSchedule 40, slot size - 0.10, PVC = polyvinyl chloride.^bAbove mean sea level; negative value indicates placement below mean sea level.^cBelow ground surface.^dAbove ground surface.

4.2.3 Site 3, Underground Storage Tanks

Twelve abandoned underground storage tanks were investigated (Figure 2-2). The location of each tank and access were confirmed; where possible, the tank contents were tentatively identified in the field. The approximate volume of solids, sludges, or liquids contained in each tank was calculated, and contents were sampled for analyses. Gas present at the valve of a fill line identified by USATHAMA as leading from the propane tank (23) was sampled for hydrocarbons using a Draeger tube. No samples were collected from media surrounding the tanks. A summary of tank inspection data collected during the RI field program is provided in Table 4-3.

4.2.4 Site 4, DRMO Drum Storage Area

Six near-surface soil samples (4SS1 through 4SS6) were collected from selected locations within or topographically downgradient from the former drum storage section of the DRMO salvage yard, as shown in Figure 2-12. Samples were taken from a depth of 0 to 1 foot below the surface layer of gravel or asphalt. Sampling locations were selected to be representative of site conditions.

4.2.5 Site 5, Battery Acid Pit

Two soil samples were collected from the Building 45 area, as shown in Figure 2-13. Soil sample 5SS1 was collected adjacent to the concrete cap of the battery acid pit in Building 45. A power drill was used (to penetrate the floor) in collection of the soil sample, which was taken from 4 to 8 feet below the floor surface. A hand auger was also used to collect a sample (5SS2) from immediately downgradient of the pit along the north wall of Building 45. This sample was collected at a depth of approximately 5 to 8 feet below ground surface. Analytical results from soil collected from this location are indicative of whether contaminants from the pit have migrated from the site through the soils beneath the pit.

4.2.6 Site 6, PCB Spill Area

Four near-surface soil samples were collected at Site 6 to verify the effectiveness of prior cleanup of a transformer spill. Samples 6SS1 through 6SS4 were collected at a depth of 0 to 1 foot below the fill, approximately 2 to 3 feet below the surface, to determine whether PCBs remained in the soil after cleanup.

Table 4-3

Summary of Tank Inspection Data

MOTBY, New Jersey

Tank I.D.	Inspection Date	Content Type	Grd. Surf. Bot. Tank	Grd. Surf. Top Tank	Access Diam.	Grd. Surf. to Liquid	Contents Stratified	Floating		Est. Vol. Prod. Layer	Est. Vol. of Water	P.I.D. (ppm)	C.G.I. (% LEL)	Comments
								Product Layer	Water Layer					
7	8/17/88	liquid	8.63	3.14	0.25	4.1	yes	4.19	0.34	1,526	124	143	17.0	red/brown color, gasoline odors
8	8/17/88	--	--	--	--	--	--	--	--	--	--	--	--	inaccessible
9	8/17/88	liquid	8.71	3.32	0.25	8.06	no	--	0.64	--	238	29	0.0	water mixed w/black sticky substance
10	8/17/88	liquid	8.68	utd	0.25	7.38	yes	0.62	0.68	4.57	501	200	13.0	pink color, gasoline odors
16	8/17/88	liquid	7.43	1.83	0.17	0.0	no	none	7.43	--	2,000	0	0.0	access open-closed w/duct tape, full of water
17	8/17/88	liquid	7.63	3.2	0.17	7.38	no	none	0.25	--	91	0	0.0	access open-closed w/duct tape, no odor
18	8/17/88	none	7.54	utd	0.17	--	--	none	none	--	--	0	0.0	no odors
19	8/17/88	sludge	utd	utd	0.17	--	no	none	none	--	--	0	0.0	oily/greasy odor, full of sticky black sludge
20	8/18/88	liquid	9.84	utd	0.33	0.0	no	none	9.84	--	15,000	12	0.0	brown fuel/water mixture, strong fuel odors
21	8/18/88	liquid	10.23	1.6	0.33	0.0	no	none	10.23	--	15,000	7	0.0	brown fuel/water mixture, strong fuel odors
22	8/18/88	liquid	10.23	2.23	0.33	3.9	no	none	6.33	--	11,869	20	0.0	yellow fuel/water mixture, strong fuel odor
23	8/18/88	utd	--	--	--	--	--	--	--	--	--	--	--	confirmed propane cont. w/Draeger tube at valve

1. Tanks 8, 18 and 23 were not sampled.

2. utd denotes unable to determine.

3. All measurements are in feet.

4. P.I.D. denotes photolionization detector reading.

5. C.G.I. denotes combustible gas indicator reading.

6. Sample from Tank 16 was misidentified during sampling as 3T18.

7. All volumes are in gallons.

Samples were collected using a hand auger and submitted for chemical analysis. Sample locations were spaced to be representative of conditions at the site, as shown in Figure 2-14.

4.2.7 Site 7, Building 105 Drum Storage Area

Five soil samples were collected in the vicinity of Site 7, as shown in Figure 2-14, and submitted for chemical analysis. Four of the samples were collected from within the area where drums were stored directly on sandy soils. Two samples were collected from each of two locations for chemical analysis--7SS1A and 7SS2A from a depth of 0 to 2 feet, and 7SS1B and 7SS2B from 4 to 6 feet. A fifth sample (7SS3) was collected from 4 to 6 feet at a location approximately 60 feet north of the site in the expected downgradient direction. Sample results from this location were to be used for evaluating the potential for migration of contaminants from the site.

4.2.8 Site 8, Fire Training Area

Five soil samples (8SS1 through 8SS5) were collected at Site 8, as shown in Figure 2-15, and submitted for chemical analysis. The sample locations were selected based on an evaluation of historical aerial photography and the approximate location of former structures or activities, using the northwest corner of Area 75 and the existing concrete pad as points of reference. Three samples were composited from soil collected from a depth of 0 to 6 feet. At the northernmost location, two soil samples were collected adjacent to and topographically downgradient from the existing concrete pad--one near surface at a depth of approximately 6 inches, and one from approximately 6 inches above the mean high-tide water table level or 5 feet below ground surface. These samples were collected to evaluate the extent and mobility of potential contaminants.

4.2.9 Additional Sampling

Based on information provided by installation personnel at the time of sampling, a single near-surface soil sample was also collected near Building 103 in an area that was thought to be potentially contaminated by an abandoned drum previously found in the vicinity. A sample was collected from a depth of 0 to 2 feet to evaluate, to a limited extent, the potential for contamination and contaminant migration in this area. Because no single area in the vicinity of Building 103 was identified as a previous drum storage area, no site has been

identified for further investigation and RI evaluation. A single sample was collected for analysis in an attempt to evaluate whether further investigation is warranted.

4.3 GEOTECHNICAL PROCEDURES

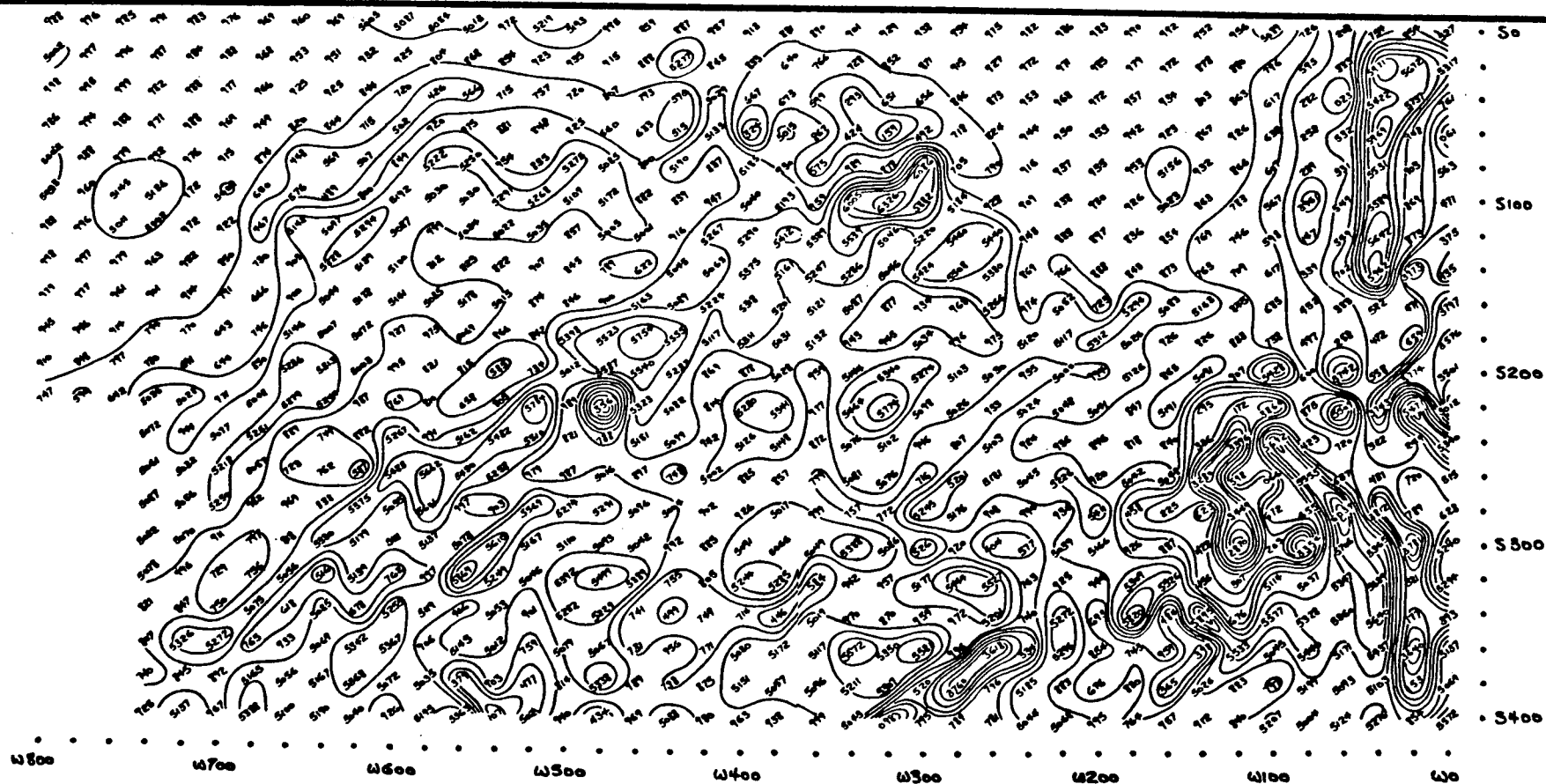
This section describes the approach followed for implementation of the geotechnical investigations, including the geophysical survey, borings, well installation and development, boring and well abandonment, surveying, and hydrologic evaluations. Sampling procedures are also presented.

4.3.1 Geophysical Survey

A geophysical survey was performed with a magnetometer to locate the extent of Site 1 boundaries. The survey was conducted by Geosight on November 19, 1987, over an estimated 7-acre area, concentrating on the landfill-hydraulic fill interface along the north edge (Figure 2-3). The purpose of the survey was to define the northern edge of the landfill area and to aid in positioning monitoring wells DM-9, DM-10, and DM-11. Prior to the survey, a coordinate system was located on the site by a surveyor. Wooden stakes were placed at 100-foot intervals. A survey using 100-foot grid spacing was completed to control the geophysical grid. Smaller interval spacings were used in selected locations to define more exact boundaries. The monitoring well network design was modified, as appropriate, based on the defined limits of the landfill.

A Scintrex MP-2 proton magnetometer was used to make a total of 834 measurements. The results of the survey are shown in Figure 4-2. Contour lines of magnetic highs shown on Figure 4-3 indicate areas of iron concentrations--probably metallic iron from discarded trash. The areas marked in Figure 4-2 indicate the location and approximate mass of iron accumulations. Although the spacial extent is not sharply defined, the central area of each accumulation is located near the middle of each marked area. Using an assumed depth of 6 feet, estimates of iron mass in each concentration area are provided in Figure 4-2. (The magnetic survey is limited to measurements of less than 30-foot depth.)

The strong magnetic lows shown in Figure 4-3 suggest the location of the northern boundary of the landfill, identified in Figure 4-2 with a broken line. Although there are accumulations of iron outside this boundary, they do not represent the major mass of the landfill. On the western side of the landfill, iron



contour interval = 200 nanotesla
 sensor height = 9 ft
 measurement spacing = 20 ft
 proton magnetometer
 total flux density

numbers are XYZ in field 54, XYZ nT
 Survey 19 Nov 87, 9:49 AM - 4:29 PM
 no temporal correction, shift \approx 20 nT
 traverse N-S, parallel \rightarrow W

FIGURE 4-3
 GEOPHYSICAL SURVEY MAGNETIC MAP
 SITE 1, LANDFILL
 MOTBY, NEW JERSEY

concentrations appear to be aligned east-west, while on the eastern side alignments are roughly parallel to the nearby fence.

4.3.2 Boring/Well Installation and Development

For installation of the 13 monitoring wells and completion of the two abandoned boreholes, the method of drilling in the unconsolidated soils was by 6½-inch-I.D. dry hollow-stem auger. Split-spoon sampling was conducted at 5-foot intervals during drilling to allow a detailed log to be developed. Where running sands in the auger casing prohibited sample collection, auger cuttings were inspected for lithologic description. An additional sample was collected for laboratory permeability testing, as discussed in Section 4.3.5.4. Split-spoon samples were collected in accordance with the Standard Penetration Test (ASTM D-1586). This method consisted of an 18-inch sampler being driven into the soil by dropping a 140-pound weight a distance of 30 inches. The number of blows needed to drive the sampler for each 6 inches of penetration was recorded on the boring logs.

A Dames & Moore geologist supervised the drilling of each borehole and maintained continuous detailed subsurface logs by examining drill cuttings, recording samples, and noting first-encountered and static groundwater levels for each borehole. In addition, a daily field log was maintained to note the progress of drilling operations, problems encountered, well installation procedures, etc.

The drill rig and all sampling equipment were decontaminated by steam cleaning after the drilling of each well. A sample from the water source used for rinsing and steam cleaning was analyzed and the results submitted to USATHAMA for approval before beginning fieldwork. All washwater generated during steam cleaning was collected and disposed of in the sanitary sewer.

After completion of the borings, well installations were performed according to USATHAMA geotechnical requirements (USATHAMA, 1987) and requirements of the State of New Jersey. All well casing and screening materials were new Schedule 40 PVC. The well screens, with a slot size of 10 (0.010 inch), were approximately 10 feet in length for the shallow wells and 5 feet for the deep wells (except for well DM-4C). Actual lengths are shown on the well construction diagrams included in Appendix A.

Threaded couplings were used to join sections of PVC casing and screening materials. All well casings and screens were thoroughly washed with USATHAMA-

approved water prior to insertion in the borehole. Tide tables (USDC, 1986; 1987) were used, as appropriate, to determine the maximum expected water table after water was encountered in the borehole. The maximum tidal fluctuation expected relative to the water table was determined; where possible, the top of the screen of the shallow wells was positioned 1 to 2 feet above the estimated high tide water table. The positioning of the screens in this manner ensured that they remained within the producing groundwater zone during low tides and drier periods, lessening the chance of a dry well during future groundwater sampling efforts. It also allowed for collection of samples at the water surface for detection of floating contaminants. The top of the well screen was placed at a minimum depth of 5 feet to allow for proper installation of the well and a sufficient seal above the screen.

The screened section was packed with medium-to-coarse sand, to at least 5 feet above the screen and to above the water table for shallow wells, wherever circumstances permitted. The overriding concern was to ensure room for a sufficient seal to prevent the vertical infiltration of surface water. A minimum 5-foot-thick bentonite pellet seal was placed above the sand pack, where possible, and the remaining annular space between the top of the seal and ground surface was grouted with a bentonite-cement mixture.

Immediately after grouting, a 5-foot length of protective, clean steel casing with a locking cap was installed over the well pipe, to a depth of about 2.5 feet below ground surface. An internal mortar collar was placed within the steel protective casing and outside the PVC well casing to a height of 0.5 foot above ground surface. An internal drainage hole was drilled through the steel casing just above the mortar collar. After the grout had thoroughly set, the protective steel casing was painted with fluorescent orange paint and identified by number in white. Additional protection was afforded by three posts set radially around the well. Completed wells were surveyed as described in Section 4.3.4.

Prior to development, the static water level in each well was measured from the top of the casing and recorded. Static water levels were also measured 24 hours after development. A summary of static water levels recorded in the wells as part of this RI is provided in Table 4-4.

To prevent cross-contamination from other sampling locations, each monitoring well was developed using a submersible pump that was steam cleaned,

TABLE 4-4

Summary of Static Groundwater Levels
MOTBY, New Jersey

Well	TPVCa Elevation ^b	January 26, 1988		August 18, 1988		Aquifer
		Water Depth From TPVC	Water Elevation	Water Depth From TPVC	Water Elevation	
DM-1	13.92	3.51	10.41	5.25	8.67	Shallow
DM-2	14.88	9.65	5.23	9.60	5.28	Deep
DM-3	23.35	8.93	14.42	9.68	13.67	Shallow
DM-4C	13.39	7.38	6.01	7.63	5.76	Deep ^d
DM-5	14.05	5.41	8.64	6.33	7.72	Shallow
DM-6	14.30	5.51	8.79	6.27	8.03	Shallow
DM-7	15.75	10.81	4.94	11.13 ^e	4.62	Deep
DM-8	13.48	5.88	7.60	6.39	7.09	Shallow
DM-9	13.79	5.42	8.37	6.18	7.61	Shallow
DM-10	13.48	6.50	6.98	7.13	6.35	Shallow
DM-11	13.41	8.55	4.86	8.21	5.20	Deep
DM-12	17.54	8.30	9.24	8.83	8.71	Shallow
DM-13	13.38	2.60	10.78	4.37	9.01	Shallow

^aTop of PVC well casing.

^bAll elevations are feet above mean sea level, NGVD 1929 datum.

^cAll depths are in feet.

^dWell completed above subsurface object, may not reflect deep aquifer conditions.

^eMeasured August 4, 1988.

and all transfer tubing was washed with USATHAMA-approved water prior to insertion.

Prior to any groundwater sampling, the water level in the well was allowed to recover to a volume sufficient to complete sample collection. During development and during sample collection, field measurements of temperature, pH, and specific conductance were made, as described in Section 4.3.6. All appropriate data and field measurements were recorded.

Drilling and development water from the wells was collected, transported, and disposed of in MOTBY's sanitary sewer.

4.3.3 Boring Abandonment

Borings DM-4 and DM-4B were abandoned because shallow bedrock (auger refusal) was encountered in the borehole. They were sealed by grouting from the bottom of the boring to ground surface. This was accomplished by placing a grout pipe to the bottom of the boring and pumping grout through it until undiluted grout flowed from the boring at ground surface. After grout placement, the augers were removed. After 24 hours, the abandoned boring was checked for grout settlement and refilled with grout, as needed.

4.3.4 Surveying

After completion of the last well, a field survey was performed to determine the horizontal coordinates and vertical elevation of the 13 new wells. The survey determined the east and north coordinates of each location to within ± 3 feet, and the elevation to within ± 0.05 foot using the National Geodetic Vertical Datum of 1929. New Jersey State Planar coordinates were reported as provided in Table 4-5.

4.3.5 Hydrogeologic Evaluation

Additional groundwater elevation data were collected to better understand contaminant migration, the effect of tidal fluxes on contaminant migration, and overall site hydrogeology. Electronic water level recorders were installed in five wells for approximately 3-day continuous monitoring of water elevations. The wells selected for this effort included DM-1, DM-2, DM-6, DM-10, and DM-11, as shown in Figure 4-4.

Slug tests were performed in four of the wells installed as part of this RI (DM-2, DM-5, DM-6, and DM-7). These tests consisted of removing a known

TABLE 4-5
Summary of Surveyed Well Elevations and Coordinates

WELL SITE LOCATION			WELL SITE ELEVATIONS			
NO.	CO-ORDINATE (NORTH)	CO-ORDINATE (EAST)	NO.	TOP OF CASING	TOP OF P.V.C.	GROUND
DM 1	N 670,265.2524	E 2,156,648.7802	DM 1	114.10	113.92	111.76
DM 2	N 670,286.6542	E 2,156,639.2740	DM 2	115.07	114.88	111.74
DM 3	N 671,219.1689	E 2,155,977.4607	DM 3	123.55	123.35	120.98
DM 4C	N 671,161.9784	E 2,156,643.2293	DM 4C	113.59	113.39	111.11
DM 5	N 670,603.8945	E 2,156,733.4641	DM 5	114.29	114.05	111.92
DM 6	N 670,518.1228	E 2,156,985.0450	DM 6	114.51	114.30	111.91
DM 7	N 670,101.8425	E 2,157,462.5065	DM 7	115.93	115.75	113.29
DM 8	N 670,369.7249	E 2,157,630.7880	DM 8	113.71	113.48	111.21
DM 9	N 671,091.9284	E 2,157,419.2041	DM 9	113.98	113.79	111.57
DM 10	N 671,172.4058	E 2,157,862.1816	DM 10	113.68	113.48	110.48
DM 11	N 671,183.8592	E 2,157,866.9527	DM 11	113.62	113.41	110.56
DM 13	N 671,173.8342	E 2,156,636.3436	DM 13	113.60	113.38	111.26
DM 12	N 671,911.4490	E 2,157,779.4341	DM 12	117.76	117.54	115.51

NOTES:

ELEVATIONS BASED ON N.G.V.D. 1929 PLUS 100.00, AS APPROVED BY BASE PERSONNEL.

CO-ORDINATES BASED ON (N.J.P.C.S.)

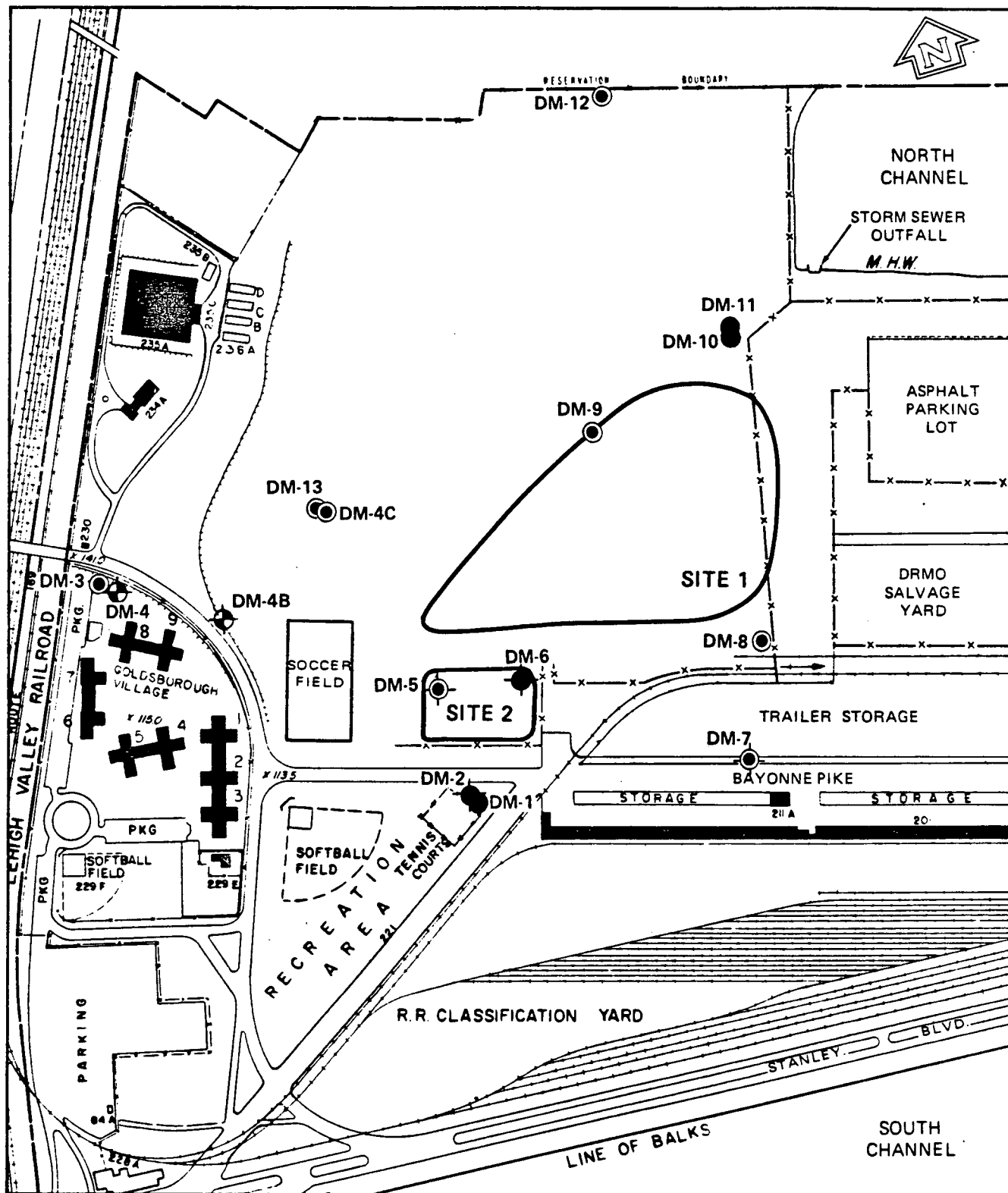


FIGURE 4-4
MONITORING WELLS USED FOR AQUIFER
CHARACTERIZATION AT SITE 1, SITE 2 AND VICINITY
MOTBY, NEW JERSEY

volume of water and recording the rate at which the water level within the well returned to equilibrium.

One undisturbed soil sample was collected for the determination of laboratory permeability values. This sample was taken using a Dames & Moore U-Type sampler, which is similar to a split-spoon sampler except that soil is collected in a split barrel containing brass rings of known dimensions, and the sampler is driven using a 300-pound weight.

A more extensive analysis of site soils was not considered necessary or useful given the manmade character of MOTBY and the likelihood of extreme heterogeneity of site soil. The one soil sample collected for permeability analysis was considered sufficient for the purpose of comparison with the hydraulic conductivity values acquired during field testing of the water table aquifer wells.

4.3.5.1 Methodology for Aquifer Characterization. To better understand hydrologic properties of the soil, rising-head (slug) tests were performed on four wells (DM-2, DM-5, DM-6, and DM-7) installed as part of this RI (Figure 4-4). The slug tests were performed by Dames & Moore personnel on March 1, 1988.

A rising-head (slug) test consists of removing water from a well to cause temporary lowering of the water table and recording the rate at which the water table rises and stabilizes. The test procedure for each well is as follows:

- Record an initial static water level in the well.
- Attach dedicated PVC tubing to an aboveground Honda centripetal pump and place the tubing in the well.
- Connect a Metrosonics DL-701 single-channel data logger to a pressure transducer, and place the transducer in the well below the PVC tubing.
- Record initial water depth on the data logger.
- Run the pump until between 0.5 and 6 feet of drawdown occurs within the well.
- Record water level recovery until the water reaches a level equal to at least 98 percent of the initial static water level.
- Remove the pressure transducer and PVC tubing from the well.

The information collected on the data logger was transferred to computer diskettes. Data were recorded as feet of water above the pressure transducer and

were converted to changes in potentiometric head (in feet) relative to the initial water level as measured from the top of the casing. Data were then recorded with their respective changes in time. The changes in head during the slug test were divided by the maximum change in head during this time. A semilogarithmic plot of the data was constructed, and two points were chosen from the best straight line segment of the graph. The changes in head, with their respective times at those two points, were used in the following equation (NAVFAC, 1982) for hydraulic conductivity:

$$K = \frac{[R^2 \ln(L/R) \ln(H_1/H_2)]}{2L(t_2 - t_1)}$$

for $L/R > 8$

where:

K = hydraulic conductivity (cm/sec)

R = inside radius of well casing (cm)

L = length of wetted well screen (cm)

t_1, t_2 = elapsed time (sec)

H_t, H_0 = head of water at time t , head of water at start of test (t_0)

H_1, H_2 = (H_t/H_0) at t_1 and t_2 , respectively.

This equation is applicable for wells in which screens are completely under the water table, as was the condition for each tested well. Data and generated plots from the slug tests are presented in Appendix C.

4.3.5.2 Results of Aquifer Testing. Analysis of the slug test data indicates that hydraulic conductivity within the deeper part of the unconfined aquifer is generally higher than in the shallow part of the aquifer. A summary of calculated hydraulic conductivity values is presented in Table 4-6.

The hydraulic conductivities of the shallow wells screened within the upper loose organic clay layer ranged from 2.6×10^{-4} centimeters per second (cm/sec) at DM-5 to 3.3×10^{-3} cm/sec at DM-6. Hydraulic conductivities ranging from 10^{-4} to 10^{-2} cm/sec are representative of unconsolidated clay to silty sand (Freeze and Cherry, 1979).

Two separate hydraulic conductivities-- 2.6×10^{-4} and 6.2×10^{-4} cm/sec--were calculated for DM-5, since a breaking slope of the plotted data was observed after the test was run for 560 seconds. The different values can be attributed to

TABLE 4-6

Estimated Hydraulic Conductivities
MOTBY, New Jersey

<u>Shallow Well Number</u>	<u>Lithologic Description of Screened Interval</u>	<u>Hydraulic Conductivity (cm/sec)</u>
DM-5	Black silty sand and organic silty clay	2.6×10^{-4}
DM-5a	Black silty sand and organic silty clay	6.2×10^{-4}
DM-6	Black silty sand and organic silty clay	3.3×10^{-3}
<u>Deep Well Number</u>		
DM-2	Dark brown silty gravel	7.8×10^{-3}
DM-7	Dark gray silty sand	1.2×10^{-2}

^aTwo hydraulic conductivity values were calculated from one test because of a significant change in the plot of recorded data.

the heterogeneity of the unconsolidated overburden in which the well is screened, as well as to possible heterogeneity within the sand pack installed around the well screen. The composite hydraulic conductivity for the entire well as a unit is likely to be found between the two values whose average is 4.4×10^{-4} cm/sec.

High recharge rates encountered in deep wells DM-2 and DM-7 prevented the establishment of a significant change in head to initiate the slug tests. The tests were run using an initial head change of approximately 0.5 foot. Hydraulic conductivity values calculated for the deep wells ranged from 7.8×10^{-3} cm/sec at DM-2 to 1.2×10^{-2} cm/sec at DM-7.

4.3.5.3 Tidal Influence Evaluation. To determine the effect of tidal fluxes on contaminant migration and overall site hydrogeology, water levels in several wells were monitored for a 3- to 5-day period. Electronic pressure transducers and data loggers were used to automatically and continuously record water levels. (A pressure transducer is a small device that is lowered into a well at the end of a cable; it produces an output voltage in proportion to the pressure caused by water above the transducer. A data logger receives voltages, converts them to equivalent units (such as feet of water), and records them at selected time intervals in its semiconductor memory.)

Metrosonics DL-701 (single-channel) and DL-712 (multichannel) data loggers were used in wells DM-1, DM-2, DM-10, and DM-11 by Dames & Moore personnel. Data loggers were small enough that they could be installed inside the well casing and secured with a lock. When the logger was installed, the initial water level was measured manually. Subsequent changes in water levels could then be computed from the measurements recorded by the logger. Data from both models of the data logger were accessed using a portable computer in the field, then converted by simple software into a common file format convenient for loading into a data base.

Water levels were recorded for 5 continuous days from February 25 through March 1, 1988. A data logger malfunction prevented the retrieval of data from wells DM-1 and DM-2. Consequently, water level data were collected from wells DM-1 and DM-2 in a similar fashion from July 29 through August 1, 1988. Continuous water level data were also recorded in well DM-6 from August 1-3, 1988.

Tidal data collected from wells DM-1, DM-2, DM-6, DM-10, and DM-11 are presented in Appendix D. No tidal effect was observed in shallow wells DM-1, DM-

6, and DM-10; a slight decline or rise in the water table was measured. Diurnal tidal cycles were observed in both wells DM-2 and DM-11. The tidal cycles, over the test interval, ranged in DM-2 from 5.9 to 6.8 feet msl and in DM-11 from 4.4 to 5.3 feet msl. Maximum daily changes were 0.85 foot in DM-2 and 0.70 foot in DM-11.

The tidal influence was not observed in shallow wells, but was evident in deeper wells--which is explained by noting the difference in measured water levels. The water level recorded in the shallow wells is significantly higher (ranging from approximately 7 to 10 feet msl) than in the deeper wells (ranging from approximately 5 to 6 feet msl). The data indicate that the deeper wells are influenced by tidal fluctuations similar to the diurnal tidal pattern present in New York Harbor (USDC, 1985).

An organic silty layer in the subsurface of the facility may act as a confining layer between the upper and lower water-bearing units. This layer would account for the differences in measured water levels between the deep and shallow wells. Groundwater would be perched on top of this confining layer, and water levels in the shallow wells would be higher than the potentiometric head measured in the deeper wells. This layer would also perch the water table measured in the shallow wells above the mean high tide elevation; thus, the tidal fluctuations would not impact the water-bearing unit into which the shallow wells are set.

4.3.5.4 Physical Test Results. A falling-head permeability test was performed on a selected sample of coarse-grained soil encountered in well DM-7. The test was performed in accordance with the ASTM Test Procedure "Method of Performing Laboratory Falling Head Permeability Test," outlined in Appendix B. Results were as follows:

<u>Boring/Well</u>	<u>Depth (ft)</u>	<u>Atterberg Limits Classification</u>	<u>Coefficient of Permeability (cm/sec)</u>
DM-7	15.0 - 16.5	ML	1.79×10^{-4}

This permeability is representative of the soil type encountered. This permeability also correlates extremely well with the hydraulic conductivity values obtained from field testing of water table aquifer wells DM-5 and DM-6.

A particle size analysis was performed on the same sample to aid in classification and correlation of a selected sample encountered in the boring. The test was performed in accordance with ASTM Test Procedure D-422, "Particle-Size Analysis of Soil." The results of this test are shown as a gradation curve in Appendix B. Approximately 68 percent of the sample by weight passed the standard No. 200 sieve.

4.3.6 Field Measurement of Conductivity and pH

Field measurements of conductivity, temperature, and pH were taken and recorded each time a surface water sample was collected, when an individual well was purged, and again after it was sampled. Conductivity and pH measurements were also taken during well development. Field measurements during sampling are provided in Table 4-7.

4.4 MEDIA SAMPLING

All sampling was accomplished in accordance with the MOTBY RI Technical Plan (USATHAMA, 1988), USATHAMA's 1987 geotechnical requirements for contamination surveys (USATHAMA, 1985; 1987), and the requirements of USATHAMA's Quality Assurance Program (USATHAMA, 1987) and chain-of-custody procedures. A summary of the sampling/analytical program is provided in Table 4-8. Analytical criteria and methods are provided in Table 4-9.

4.4.1 Groundwater

Groundwater samples were collected from the 13 wells installed as part of this RI. Sample locations are shown in Figure 2-3; sample results are presented in Section 5.0. A primary consideration for obtaining a representative groundwater sample was to guard against mixing the sample with standing, stagnant water in the well casing. In a nonpumping well, there is little or no vertical mixing of the volume of water above the screened interval, and stratification may occur. Such stagnant water may contain foreign or degraded material, resulting in an unrepresentative sample and misleading chemical data. Therefore, wells were purged prior to sample collection.

The following procedures were used to collect groundwater samples from the monitoring wells shown in Figure 2-3:

- Sampling occurred more than 14 days after well development had been completed.

Table 4-7

Field Measurements of Conductivity, Temperature and pH
MOTBY, New Jersey

Site I.D.	Sample I.D. (a)	Matrix (b)	Date	Time	pH	Conductivity (umhos/cm)	Temperature (deg. C)
-----	-----	-----	----	----	--	-----	-----
Site 1, Landfill	1SW1	SW	8/8/88	10:00	5.9	425	26.4
	1SW2	SW	8/8/88	11:00	6.8	845	27.5
	1SW3	SW	8/8/88	13:20	7.1	1590	20.5
	1SW4	SW	8/8/88	15:20	6.7	17200	26.4
	1SW3 (d)	SW	8/8/88	13:20	7.1	1590	20.5
	1SW43	FB	8/8/88	14:00	4.6	0	27.2
	DM-3	CW	8/2/88	11:30	10.5	95	19.6
	DM-4C	CW	8/5/88	13:00	6.6	132	19.5
	DM-7	CW	8/4/88	9:55	11.7	7.7	18.0
	DM-8	CW	8/3/88	15:10	7.0	1552	20.0
	DM-9	CW	8/5/88	11:05	6.4	1031	22.8
	DM-10	CW	8/2/88	14:50	8.1	100	21.0
	DM-11	CW	8/2/88	16:55	8.3	90	19.3
	DM-12	CW	8/4/88	15:20	7.1	608	19.7
	DM-13	CW	8/5/88	12:55	6.8	2950	22.8
	DM-43	FB	8/5/88	9:20	4.8	13.7	24.2
Site 2, Former Naval Storage Area	DM-1	CW	8/3/88	13:25	8.6	1716	20.5
	DM-1	CW	8/5/88	9:05	6.3	1492	21.4
	DM-2	CW	8/3/88	14:00	8.3	10.86	20.6
	DM-5	CW	8/4/88	13:10	6.6	2090	18.8
	DM-6	CW	8/4/88	11:00	6.6	127.7	20.9
Site 3, Underground Storage Tanks	3T7	TANK	8/17/88	12:15	5.3	0.03	26.5
	3T9	TANK	8/17/88	12:30	6.9	4000	26.0
	3T10	TANK	8/17/88	12:38	6.7	3750	25.3
	3T17	TANK	8/17/88	13:30	3.8	260	27.8
	3T18	TANK	8/17/88	13:55	6.2	260	30.8
	3T20	TANK	8/18/88	9:33	8.3	1240	18.3
	3T21	TANK	8/18/88	8:10	8.5	1990	17.8
	3T22	TANK	8/18/88	8:45	7.8	1620	19.3

(a) D = duplicate sample.

(b) SW = surface water; CW = groundwater; and FB = field blank.

TABLE 4-8
Sampling/Analysis Program for Remedial Investigation
MOTBY, New Jersey

Site	Sample No. (a)	Analyses (a)	Suspected Contaminant Source
1	DM3, DM4, 1SW1, 1SE1 1SS1, DM7, DM8, DM9, DM10, DM11, DM12, DM13, 1SW2, 1SW3, 1SW4, 1SE2, 1SE3, 1SE4, DM9, 1SW3	VOCs, BNAs/Pest/PCBs (b), metals (c), sulfate, O&G Cyanide	Background Site 1
2	DM1, DM2, DM5, DM6 2SS1, 2SS2, 2SS3, 2SS4, 2SS5, 2SS6 2SS6	VOCs, BNAs/Pest/PCBs (b), metals (c), sulfate, O&G Cyanide	Background Sites 1 and 2
3	3T7, 3T8, 3T9, 3T10, 3T16, 3T17, 3T18, 3T19, 3T20, 3T21, 3T22 3T23	Lead, Fingerprinting ^d As, Cr, Cd, Pb, and Zn VOCs BNAs/Pest/PCBs (b), As, Cr, Cd, Pb, and Zn Propane vapor	Site 3
4	4SS1, 4SS2, 4SS3, 4SS4 4SS5, 4SS6	VOCs, BNAs/Pest/PCBs (b), metals (c), O&G	Site 4
5	5SE1, 5SS1, 5SS2, 5SS3	EP metals (e), pH, Sp. Cond.	Site 5
6	6SS1, 6SS2, 6SS3, 6SS4	PCBs	Site 6
7	7SS1A, 7SS1B 7SS2A, 7SS2B, 7SS3	VOCs, BNAs/Pest/PCBs (b), PP metals, Ba, O&G, EP toxicity (e) VOCs (f), O&G	Site 7
8	8SS1, 8SS2, 8SS3, 8SS4, 8SS5	VOCs, BNAs/Pest/PCBs (b), PP metals (g), Ba	Site 8
Other	9SS1	VOCs (f)	

^aAbbreviations:

DM = groundwater
SW = surface water
SS = soil
SE = sediment
T = tank

VOCs = volatile organic compounds (TCL)
BNAs = base neutrals and acid extractables (TCL)
Pest = pesticides (TCL)
O&G = oil and grease
PCB's = polychlorinated biphenyls
PP = priority pollutants
TCL = Target Compound List

^bVOC and BNA/pesticide/PCB analyses include library search unless otherwise indicated; Target Compound List will be used for analyses.

^cPrimary and secondary drinking water standard metals--As, Ba, Cd, Cr, Pb, Hg, Se, Ag, Cu, Fe, Mn, and Zn.

^dTank sample was either liquid or sediment; see text discussion.

^eTotal and EP toxicity (metals) for soil matrix samples As, Ba, Cd, Cr, Pb, Hg, Se, and Ag.

^fExcludes library search.

^gPriority pollutant metals include Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, and Zn.

TABLE 4-9

Analytical Criteria and
Methods for Remedial Investigation
MOTBY, New Jersey

Analyte	Water Samples					Soil/Sediment Samples			
	USATHAMA Compound Code	USATHAMA Method No.	Analytical Technique	CRL ^a (ug/l)	URL (ug/l)	USATHAMA Method No.	Analytical Technique	CRL ^a (ug/g)	URL ^b (ug/g)
<u>Volatiles^c</u>									
1,2-Dichloroethane-d ₄	12DCD4	UM12	GC/MS	1.6	400	LM12	GC/MS	0.0042	0.10
Toluene-d ₈	MEC6D8	UM12	GC/MS	1.8	400	LM12	GC/MS	0.010	0.10
4-Bromofluorobenzene	4BFB	--	--	--	--	LM12	GC/MS	0.0070	0.10
Ethyl benzene-d ₁₀	ETBD10	UM12	GC/MS	1.2	400	LM12	GC/MS	0.010	0.10
<u>BNAs/Pesticides/PCBs^c</u>									
Diethyl phthalate-d ₄	DEPD4	UM13	GC/MS	11	400	LM11	GC/MS	0.62	2.0
Nitrobenzene-d ₅	NBD5	UM13	GC/MS	7.4	200	LM11	GC/MS	0.25	2.0
1,3-Dichlorobenzene-d ₄	13DBD4	UM13	GC/MS	0.89	400	LM11	GC/MS	0.53	2.0
2-Chlorophenol-d ₄	2CLPD4	UM13	GC/MS	8.4	400	LM11	GC/MS	0.42	2.0
<u>Metals</u>									
Arsenic	As	SD11	Furnace-AA	2.92	20	JD11	Furnace-AA	2.22	40
Barium	Ba	SS06	ICP-AES	1.41	2,000	JS05	ICP-AES	7.98	40
Cadmium	Cd	SS06	ICP-AES	4.09	2,500	JS05	ICP-AES	0.951	250
Chromium, total	Cr	SS06	ICP-AES	4.44	5,000	JS05	ICP-AES	9.31	500
Copper	Cu	SS06	ICP-AES	6.20	2,000	JS05	ICP-AES	6.29	40
Iron	Fe	SS06	ICP-AES	55.1	5,000	JS05	ICP-AES	1.52	50
Lead	Pb	SD11	Furnace-AA	2.16	20	JS05	ICP-AES	923	750
Manganese	Mn	SS06	ICP-AES	2.88	2,000	JS05	ICP-AES	292	2,000

TABLE 4-9 (cont'd)

Analyte	Water Samples					Soil/Sediment Samples			
	USATHAMA Compound Code	USATHAMA Method No.	Analytical Technique	CRL ^a (ug/l)	URL (ug/l)	USATHAMA Method No.	Analytical Technique	CRL ^a (ug/g)	URL ^b (ug/g)
<u>Metals (cont'd)</u>									
Mercury	Hg	SB10	CVAA	0.100	2.00	JB09	CVAA	0.0179	0.400
Selenium	Se	SS06	ICP-AES	98.6	15,000	JS05	ICP-AES	92.4	750
Silver	Ag	SS06	ICP-AES	5.56	1,000	JS05	ICP-AES	0.699	25
Zinc	Zn	SS06	ICP-AES	5.35	2,000	JS05	ICP-AES	8.38	200
<u>Organics</u>									
Oil and grease	OILGR	EPA 413.2	IR-SPEC	100 ^c	N/A	EPA 413.2	IR-SPEC	10 ^d	N/A
<u>Inorganics</u>									
Sulfate	SO4	TT06	Ion Chrom	50	1,000	KT03	Ion Chrom	14	100

^aCRL = Certified Reporting Limit.

^bURL = Upper Reporting Limit.

^cCompounds listed are control analytes only.

^dCertification not required.

- Groundwater elevations were measured and recorded in each well prior to purging and sampling.
- Where recharge rates permitted, the well was purged by pump or bailer to remove five times the volume of the standing water in the well. Water levels were allowed to recover to a volume sufficient for sample collection prior to sample withdrawal.
- At the time of sampling, after collection of the sample for chemical analyses, a second sample was collected for in-field measurement of temperature, pH, and conductivity.
- At each well, the sample was collected with a bailer dedicated for that well. After sampling, the bailer was marked with the well designation and hung inside the well casing above the water. All other sampling equipment was also rinsed with USATHAMA-approved water between wells to prevent cross contamination.
- Sample containers and caps were triple-rinsed with the water being sampled. The samples were collected so as to minimize aeration during sample collection.
- Samples for metals analysis were not filtered in the field, but were preserved according to USATHAMA requirements. Samples for nonvolatiles were filtered in the laboratory as appropriate. Samples collected for oil and grease analyses were not filtered.
- Sample containers were labeled with appropriate identifying information (location, date, time, condition, etc.), and each sample was logged in a field notebook at the time of collection. Labeling and log-book information requirements specified in the QA Plan were met.
- All sample containers were transferred to a temperature-controlled chest, kept at a temperature of 4°C, and delivered to the laboratory in sufficient time so that specified holding times were not exceeded.
- Appropriate safety precautions outlined in the RI Health and Safety Plan were taken during sampling to guard against anticipated physical and environmental hazards of toxic materials.

4.4.2 Surface Water

Four sampling points were selected (Figure 2-3) at Site 1 to obtain representative background and site surface water quality characteristics, to determine the nature of pollution from contaminant sources, and to evaluate the fate and extent of migration of the pollutants in surface water. Results of sample analyses are provided in Section 5.0.

- Sample 1SW1 was collected as a background sample.
- Sample 1SW2 was collected from a water body within the landfill area.
- Sample 1SW3 was taken from a spring potentially fed by groundwater passing within the landfill area.
- Sample 1SW4 was collected from the storm sewer outfall that discharges to the North Channel, at the northeastern edge of the landfill.

Sample 1SW4, though taken near low tide, was likely more representative of water quality in the North Channel than storm sewer discharge because the sewer was partially submerged even near low tide. Samples 1SW2 and 1SW3 should indicate the potential for contaminants to leave the site via shallow near-surface groundwater.

A representative sample for analysis was collected at each sampling location. The following sample collection procedures were used:

- All sampling equipment (containers, tubing, pumps) was cleaned with USATHAMA-approved water prior to use to minimize contamination.
- All sample containers (except vials for VOC analyses) and sampling equipment were triple-rinsed with water from the sampling location prior to the collection of samples.
- Grab samples were collected at approximately one-half to two-thirds of the water depth, where possible.
- Samples were collected during dry weather conditions.
- No samples were filtered in the field.
- All samples were preserved according to appropriate QA requirements.

- Sample containers were completely filled with water, wiped clean and dry, marked with a waterproof marker, and stored for shipment. Identifying information included the time, date, location, depth, sampler's initials, and identification number. Samples containing anticipated high concentrations were so marked.
- Samples were stored in a temperature-controlled chest, kept at a temperature of 4°C, and shipped to the laboratory in sufficient time so that specified holding times were not exceeded.
- Appropriate safety precautions were observed during sampling to guard against anticipated physical and environmental hazards of toxic materials.

4.4.3 Sediment

Sediment sampling was conducted at each surface water sampling point. Results of sample analysis are provided in Section 5.0. Sample ISE1 was collected as a background sample. Samples ISE2, ISE3, and ISE4 were collected to indicate whether contaminants have migrated to the water bodies sampled and become trapped in the sediments.

Sediment samples were collected to a depth of approximately 12 inches beneath the sediment-water interface, whenever possible. Samples were collected with a small hand shovel. In sampling, care was taken to collect and retain the "fines," which often contain the highest concentrations of chemical deposits.

After collection, the sediment sample container was wiped clean, dried, and labeled. The label, written with indelible ink, included the time, date, location, sampler's initials, and identification number. The samples were stored and shipped in the same manner as surface and well water samples.

After the sample had been collected at a particular location, the sampling device was scrubbed, if necessary, and rinsed with USATHAMA-approved water to prevent cross contamination.

4.4.4 Soil

A total of 31 soil samples were collected for chemical analyses at MOTBY, including one potential background sample and 30 additional samples from the following sites:

- Background, north of Goldsborough Village
- Site 2, Former Naval Storage Area
- Site 4, DRMO Drum Storage Area
- Site 5, Battery Acid Pit
- Site 6, PCB Spill Area
- Site 7, Building 105 Drum Storage Area
- Site 8, Fire Training Area
- Vicinity of Building 103.

The soil samples were collected using a small shovel or hand auger and taken from the depths specified in Section 5.0. Results of sample analysis are also provided in Section 5.0.

The following procedures were used to collect soil samples:

- Soils were sampled using a shovel or hand auger. All sampling equipment was cleaned with USATHAMA-approved water between samples to prevent cross-contamination. Samples were collected from specified depths.
- Only stainless-steel utensils and pans were used for the transfer or compositing of the soil prior to placement in the sample jars.
- Samples were stored and shipped in wide-mouth glass containers or other appropriate containers, as specified in the RI Technical Plan.
- Samples were marked with identifying information and logged in the field notebook. Identifying information on the labels of all sample bottles included source/sampling location, date and time sample was taken, identity of sampler, parameter(s) to be analyzed, and preservative(s) added (if any).

4.4.5 Underground Storage Tanks

Ten of 12 abandoned underground storage tanks were sampled for chemical analysis as part of the RI; one of the tanks (T18) was found empty, and one was inaccessible (T8). The results of sample analysis are provided in Section 5.0. The tank identification numbers, contents, capacities, construction materials, and installation dates are shown in Table 2-1. Tank locations are shown in Figure 2-2 and in individual figures presented in Section 2.3.3. Sampling included the

determination of existing tank content volumes and collection of a sample. Existing volumes were determined by measuring the depth to liquid and depth to bottom and comparing these amounts to available installation drawings and known capacities. Tank inspection and sampling report forms are provided in Appendix E.

During sampling, efforts were made to determine whether the tank contained a sludge layer, product layer, or water layer. Information collected during inspection is provided in Table 4-3. This task was accomplished with clean bailers and tape measures coated with a material used to determine product-water interfaces. In the case of T19, where the tank did not contain a liquid fraction, a sludge sample was collected. The size, construction material, and location of access determined the types of equipment and method of sample collection. Water samples were collected using a peristaltic pump or hand-bailer. Sludge samples were collected using a hand corer.

The procedures listed below were followed during sample collection:

- Depth to liquid, depth to sludge, and depth to bottom were measured and recorded in each tank, as appropriate, prior to sampling. The product-water interface was identified, where possible.
- Dedicated bailers were used for tank sampling. Other sampling equipment was dedicated, disposable, or rinsed and scrubbed with USATHAMA-approved water between sampling of each tank to prevent cross contamination.
- Samples were transferred to appropriate containers, labeled with appropriate identifying information (location, date, time, etc.), and logged in a field notebook at the time of collection. Labeling and logbook requirements were met, and USATHAMA chain-of-custody procedures were followed.
- Appropriate safety precautions were taken during sampling to guard against anticipated physical and environmental hazards of toxic materials.

Chemical analysis for samples collected from the tanks was based partly on visual inspection of the sample and partly on history of the tank. Samples from Tanks 7, 9, and 10 appeared to be fuel product. Sample 3T9 was analyzed for total

petroleum hydrocarbons. Samples 3T7 and 3T10 were taken to confirm or determine the type of fuels. In this case, samples known to be leaded gasoline, unleaded gasoline, and No. 2 diesel were collected from existing operations at the installation and analyzed using gas chromatography/mass spectrometry (GC/MS). GC/MS results from the tank samples were then compared to known sample GC/MS results for fingerprint identification.

Due to the age of contents in Tanks 16 and 17, samples from these tanks were analyzed for TPHCs (rather than being "fingerprinted") and for VOCs. The sample from Tank 16 was inadvertently labeled as 3T18 while sampling and was submitted as such to the laboratory.

Tank 19 previously contained waste oil and was determined to currently contain a waste oil sludge. Since information was limited concerning the source or components of the waste oil and the potential for other contaminants to be mixed with the oil, sample analysis included BNAs, PCBs, and some metals (As, Ca, Cr, Pb, and Zn).

Because Tanks 20, 21, and 22 are located on land that was leased to a private contractor for more than 15 years and tank history is unknown during that period, sample analysis for these tanks was the same as for Tank 19.

Tank 23 contained propane. A detector tube was placed at the tank outlet to indicate whether propane (petroleum hydrocarbons) was being released from the tank when the nozzle was opened. No laboratory analysis of tank contents was conducted. Tank 23 was determined to be formerly associated with a vaporizer building operation. The abandoned tank is located within a buried concrete vault, as discussed in Section 2.3.3. The sample collection port was located a significant distance from the tank in an enclosed area at the northeast corner of Building 100, and it was difficult to assess whether the propane detected was released as a result of residual line pressure or tank contents.

On December 13, 1988, Dames & Moore escorted H. Emerson Thomas, a liquefied propane gas and natural gas consultant for Thomas Consulting Co., Inc., on a visit to Tank 23. Mr. Thomas looked at the valves, piping, and machinery in the vaporizer house; the access dry well; and available diagrams. No physical disturbance of the site occurred. This visit resulted in the following tentative conclusions:

- A concrete enclosed propane tank is an unusual installation.
- No part of the propane tank is visible.
- The presence of a tank coating for rust protection could not be identified.
- None of the tank or system gauges appeared operational.
- A gauge that indicates how much liquid propane is present in the tank could not be located.
- The propane tank piping system appears to be unique and dissimilar to other systems typically used.

Based on the site visit, it was determined that more specific installation data are needed before remediation can begin. A likely remediation strategy would be to construct a proper vent and have a controlled burn of the tank contents.

5.0 CONTAMINATION ASSESSMENT

5.1 INTRODUCTION

The purpose of the RI sampling and analysis program was to collect analytical data for evaluation, to identify contaminants associated with each site, and to perform a contamination assessment for each site. The following sections present a review of the sampling and analytical program for each of the eight sites of concern. Figures 2-3 through 2-15 show sampling locations at each of the sites. The number and location of samples were selected to identify sources of contaminants and potential pathways of contaminant migration. The primary media of concern were sampled at each site. Secondary media were sampled as appropriate to evaluate the extent and potential for contaminant migration. At Sites 1 and 2, groundwater, surface water, soil, and sediment were sampled. Only soil was sampled at the remaining sites--except at Site 3, where only tank contents were sampled. Table 4-8 summarizes the investigative analytical program for each site.

Section 5.2 provides a discussion of the applicable water quality standards/criteria used in the evaluation of sites and an assessment of the potential threat to human health or the environment.

5.2 APPLICABLE STANDARDS AND CRITERIA FOR SITE EVALUATION

Various Federal and State groundwater and surface water regulations were reviewed to identify requirements applicable to evaluation of the sites at MOTBY. Table 5-1 presents the standards/criteria considered to be most applicable to the sites currently under investigation. The applicable standards/criteria for groundwater, surface water, and soil/sediment are briefly discussed below.

5.2.1 Groundwater

Legally enforceable standards for groundwater include Federal Maximum Contaminant Levels (MCL) and the State of New Jersey Groundwater Standards (NJGS). Nonenforceable standards for groundwater include Federal Maximum Contaminant Level Goals (MCLG) and Secondary Maximum Contaminant Levels (SMCL).

TABLE 5-1
Summary of Applicable Standards/Criteria

Analytical Parameters	Groundwater			Surface Water			Soil	
	Federal Standards (ug/l)			New Jersey Standards (ug/l)	Federal Standards (ug/l)	New Jersey Standards (ug/l)	Typical Soil Concentration Range (ug/g)	
	MCL (a)	MCLG (b)	SMCL (c)	NJGS (d)	FAWQC (e)	FWS (f)	SWS (g)	Mean (h)
								Upper Range (h)
VOLATILE ORGANIC COMPOUNDS								
Benzene	5	0			700	5300	5100	
Toluene		2000	40		5000	17500	5000	
Ethylbenzene		700	30			32000	430	
Carbon tetrachloride	5	0				35200	50000	
Chlorobenzene								
1,2-Dichloroethane	5	0				20000	113000	
1,1,1-Trichloroethane	200	200				18000	31200	
1,1-Dichloroethane								
1,1-Dichloroethylene	7	7				11600 (l)	224000 (l)	
1,1,2-Trichloroethane						9400		
1,1,2,2-Tetrachloroethane						2400	9020	
Chloroethane								
2-Chloroethyl vinyl ether								
Chloroform					6400	28900		
1,2-Dichloropropane		0			3040	5700 (j)	3040 (j)	
1,3-Dichloropropane						5700 (j)	3040 (j)	
Ethylene dibromide		0						
Trans-1,3-Dichloropropane						5700 (j)	3040 (j)	
Cis-1,3-Dichloropropane						5700 (j)	3040 (j)	
Methyl ethyl ketone								
Methyl isobutyl ketone								
Methylene chloride								
Methyl chloride								
Methyl bromide								
Bromoform					6400			
Chloromethane								
Dichlorobromomethane								
Trichlorofluoromethane						11000	6400	
Chlorodibromomethane								
Tetrachloroethylene		0			460	840	450	
Trichloroethylene	5	0				45000	2000	
Vinyl chloride	2	0						
1,2-trans-Dichloroethylene		10				11600 (l)	224000 (l)	
Acetone								
Carbon Disulfide								
2-Butanone								
Vinyl acetate								
4-Methyl-2-pentanone								
2-Hexanone								
Styrene		0						
Xylenes (total)		10000	20					
M-Xylene								
O-Xylene								
P-Xylene								
Total Volatile Organics								
BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS								
1,2-Dichlorobenzene		600	10			763 (k)	1970 (k)	
1,3-Dichlorobenzene						763 (k)	1970 (k)	
1,4-Dichlorobenzene	75	75	5			763 (k)	1970 (k)	
Hexachloroethane								
Hexachlorobutadiene						9.3	32	
Hexachlorobenzene						250 (l)	129 (l)	
1,2,4-trichlorobenzene						250 (l)	129 (l)	
bis(2-chloroethoxy)methane								
Naphthalene						620	2350	
2-Chloronaphthalene								
Isophorone						117000	12900	
Nitrobenzene						27000	6680	
2,4-Dinitrotoluene						230	590	
2,6-Dinitrotoluene								
Benzidine				0.1				
4-Bromophenyl phenyl ether						2500		
Butyl benzyl phthalate					3.4 (m)	3.0 (m)	2944 (m)	
bis(2-Ethylhexyl) phthalate					3.4 (m)	3.0 (m)	2944 (m)	
Di-n-octyl phthalate					3.4 (m)	3.0 (m)	2944 (m)	
Dimethyl phthalate					3.4 (m)	3.0 (m)	2944 (m)	
Diethyl phthalate					3.4 (m)	3.0 (m)	2944 (m)	
Di-n-butyl phthalate					3.4 (m)	3.0 (m)	2944 (m)	
Fluorene								
Fluoranthene					16	3980	16	
Chrysene							300 (m)	
Pyrene							300 (m)	

TABLE 5-1 (cont'd)
Summary of Applicable Standards/Criteria

Analytical Parameters	Groundwater			Surface Water			Soil		
	Federal Standards (ug/l)			New Jersey Standards (ug/l)	Federal Standards (ug/l)	New Jersey Standards (ug/l)	Typical Soil Concentration Range (ug/g)		
	MCL	MCLG	SMCL	NJGS	FAWQC	FWS	SWS	Mean	Upper Range
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(h)
Phenanthrene							300 (m)		
Anthracene							300 (m)		
Benzo(a)anthracene							300 (m)		
Benzo(b)fluoranthene									
Benzo(k)fluoranthene									
Benzo(a)pyrene							300 (m)		
Indeno(1,2,3-c,d)pyrene							300 (m)		
Dibenzo(a,h)anthracene							300 (m)		
Benzo(g,h,i)perylene									
4-Chlorophenyl ether									
3,3'-Dichlorobenzidine									
bis(2-chloroethyl) ether									
Hexachlorocyclopentadiene						5.2	7.0		
N-Nitrosodiphenylamine						5850 (o)	300000		
Acenaphthylene							300 (m)		
Acenaphthene					710	1700	710		
N-Nitrosodi-n-propylamine						5850 (o)			
bis(2-chloroisopropyl) ether									
Benzoic acid									
Dibenzofuran									
Dodecane									
Heptadecane									
Hexadecane									
Tridecane									
2-methyl naphthalene									
Total Base/Neutral Organics									
ACID EXTRACTABLE ORGANIC COMPOUNDS									
Phenol				3500		2560	5800		
2-Nitrophenol						230 (p)	4850 (r)		
4-Nitrophenol						230 (p)	4850 (r)		
2,4-Dinitrophenol						230 (p)	4850 (r)		
4,6-Dinitro-o-cresol (2-methylphenol)						230 (p)	4850 (r)		
Pentachlorophenol					7.9	3.2	34		
p-chloro-m-cresol (4-chloro-3-methylphenol)									
2-Chlorophenol						4380			
2,4-Dichlorophenol						365			
2,4,6-Trichlorophenol						970			
2-methyl phenol									
4-methyl phenol									
2,4-Dimethylphenol									
Total Acid Extractables									
PESTICIDES/PCBS									
Alpha-Endosulfan (-1)						0.056(24)(FW2)(q)	0.0087(24)(SESC)		
Beta-Endosulfan (-11)						0.056(24)(FW2)	0.0087(24)(SESC)		
Endosulfan sulfate						0.056(24)(FW2)	0.0087(24)(SESC)		
Alpha-BHC									
Beta-BHC									
Delta-BHC									
Gamma-BHC (Lindane)	4					0.080(24)(FW2)	0.16		
Aldrin				3		3.0	1.3		
Dieldrin				3		0.0019(24)	0.0019(24)		
4,4'-DDE						1050	14		
4,4'-DDD									
4,4'-DDT				1		0.0010(24)	0.0010(24)		
Endrin	0.2			4		0.0023(24)	0.0023(24)		
Endrin aldehyde									
Heptachlor		0				0.0038(24)	0.0036(24)		
Heptachlor epoxide		0			0.004				
Chlordane		0			0.0002				
Toxaphene	5	0		0.005	0.03	0.0043	0.004		
Arochlor 1016					0.03	0.013(24)(FW2)	0.07		
Arochlor 1221					0.03				
Arochlor 1232					0.03				
Arochlor 1242					0.03				
Arochlor 1248					0.03				
Arochlor 1254					0.03				
Arochlor 1260					0.03				
Total PCBs				0.001		0.014(24)(FW2)	0.030(24)(SESC)		

TABLE 5-1 (cont'd)
Summary of Applicable Standards/Criteria

Analytical Parameters	Groundwater			Surface Water			Soil		
	Federal Standards (ug/l)			New Jersey Standards (ug/l)	Federal Standards (ug/l)	New Jersey Standards (ug/l)	Typical Soil Concentration Range (ug/g)		
	MCL (a)	MCLG (b)	SMCL (c)	NJGS (d)	FAWQC (e)	FWS (f)	SWS (g)	Mean (h)	Upper Range (h)
METALS									
Manganese			50	50 (s)					
Iron			300	300 (s)					
Antimony						1600		0.76	8.8
Arsenic	50			50	13/36	440	508	7.4	10
Barium	1000	5000		1000				420	1500
Beryllium						5.3		0.85	7
Cadmium	10	5		10	9.3	0.012(24)	4.5(24)		
Chromium (Total)	50	100						52	1000
Chromium (hexavalent)				50	50	0.29(24)	18(24)		
Copper		1300	1000	1000 (s)	2.9	5.6(24)	4.0(24)	22	700
Lead	50	0		50	5.6	0.75(24)	25	17	300
Mercury	2	2		2	0.025	0.00057(24)	0.025(24)	0.12	3.4
Nickel					8.3	56(24)	7.1(24)	18	700
Selenium	10	50		10		35/760	54/--	0.45	3.9
Silver	50		90	50		0.12	2.3		
Thallium						40	2130	8.6	23
Zinc			5000	5000 (s)	86	47(24)	58(24)	52	2900
MISCELLANEOUS									
Ammonia						20 or 50			
Total cyanide				500 (s)	1.0	3.5(24)	30		
Chloride			250000	8G (s)					
Fluoride	4000		2000	2000 (s)					
Nitrate as N	10000			10000					
Oil and Grease				non-noticable (s)					
Sodium				8G (s)					
Sulfate			250000	8G (s)		250000			
Total petroleum hydrocarbons				non-noticable (s)					
pH			6.5-8.5	5-9(s)	6.5-8.5	6.5-8.5			

- (a) MCL - Maximum contaminant level.
(b) MCLG - Maximum contaminant level goal.
(c) SMCL - Secondary maximum contaminant level.
(d) NJGS - New Jersey groundwater standard, statewide; (s) secondary standard; and BG - natural background.
(e) FAWQC - U.S. EPA ambient salt water quality criterion.
(f) FWS - Fresh water standard.
(g) SWS - Salt water standard.
(h) Mean/upper range of typical regional soil concentrations (USGS, 1984).
(i) Value is total concentration of all Dichloroethylenes.
(j) Value is total concentration of all Dichloropropanes.
(k) Value is total concentration of all Dichlorobenzenes.
(l) Value is total concentration of all chlorobenzenes.
(m) Value is total concentration of all phthalate esters.
(n) Value is total concentration of all PAHs.
(o) Value is total concentration of all nitrosamines.
(p) Value is total of 2-nitrophenol, 4-nitrophenol, 2,4-dinitrophenol and 4,6-dinitro-o-cresol.
(q) (24) = 24-hour average value; FW2 = standard applies to freshwater identified as FW2.

MCLs are established by USEPA's Office of Drinking Water and are described in the National Primary Drinking Water Regulations (NPDWR; 40 CFR 141) established under the authority of the Safe Drinking Water Act. Technically, MCLs are applicable only to a public water utility or a private drinking water source with 25 or more service connections. Since groundwater at MOTBY is currently not used for drinking water purposes, the current applicability of MCLs is somewhat questionable. However, MCLs are considered in the site evaluations for comparison purposes.

MCLGs are nonenforceable standards established prior to evaluation of the technological and cost constraints associated with achieving the MCL. Therefore, MCLGs are often more stringent (in many cases zero) than the enforceable MCL, which ultimately is the successor of the MCLG. In the absence of MCLs, MCLGs are useful for assessing groundwater contamination. However, care must be exercised in evaluating the significance of an MCLG exceedance, because the subsequent MCL is likely to be higher than the MCLG (i.e., the contaminant concentration that was in excess of the MCLG may not exceed the future MCL).

SMCLs were created to protect the aesthetic qualities of groundwater such as taste and odor. Exceedance of the SMCLs does not necessarily represent a potential health problem, but suggests a reduction of the usefulness of the groundwater as a potable water source. SMCLs are considered in the present study because they are available for a number of contaminants for which neither MCLs nor MCLGs are available.

NJGS (N.J.A.C. 7:9-6.1 et seq.) apply statewide and in general reflect the Federal MCLs.

5.2.2 Surface Water

Surface water criteria include Federal Ambient Water Quality Criteria (FAWQC) and New Jersey State Ambient Water Quality Criteria (NJAWQC). FAWQCs are developed by USEPA in fulfillment of the requirement to protect and improve surface water quality, as described in Section 304(a) of the Clean Water Act. The intent is to promote sufficient surface water quality to maintain public health and welfare and to maintain aquatic life. This dual intent of the FAWQCs has frequently resulted in the establishment of more than one FAWQC for some

chemicals. The applicability of the FAWQCs depends on the intended use of the surface water. At MOTBY, the intended use of streams and other surface water bodies does not include human consumption of water; therefore, the applicable FAWQCs are for the protection of marine aquatic life.

The FAWQCs for the protection of marine organisms are considered more applicable than the FAWQCs for the protection of fresh water organisms, because tidal (marine) influences extend to water that drains MOTBY. Surface water bodies surrounding MOTBY are tidal.

The FAWQCs for the protection of aquatic life consist of both marine water acute criteria and marine water chronic criteria. The acute criterion--derived from acute toxicity data--is for short-term exposures at high concentrations. It is larger than the chronic criterion for a given chemical and corresponds to the maximum allowable level regardless of the exposure period. The chronic criterion for a given chemical is derived from chronic toxicity data--i.e., relatively long-term exposures at low concentrations. It corresponds to the acceptable exposure concentration that may persist for a period of up to 24 hours. The chronic marine criteria are considered more applicable at MOTBY than the acute marine criteria, because most of the potential surface water contamination at MOTBY has been detected at very low concentrations. Such low levels are likely chronic, considering the old age of most of the sites.

FAWQCs for the protection of aquatic life are chronic criteria based on USEPA criteria from the Federal Water Pollution Control Act, but they may not necessarily be set at the present USEPA levels. The criteria are not mandatory, but are established so that "when not exceeded, should generally protect the water environment for aquatic life and various reasonable beneficial uses with an adequate degree of safety" (USEPA, 1986b).

5.2.3 Soil/Sediment

There are no Federal or State standards or criteria applicable to soil or sediment. However, Shacklette and Boerngen performed a survey for the U.S. Geological Survey (USGS, 1984) in which they measured background levels of 50 inorganic chemical elements in hundreds of soil samples from throughout the eastern United States and New Jersey. This data base is useful for assessing whether the metals concentrations observed in soil and sediment samples

from the subject sites are within the range of concentrations observed for regional soils. However, the data base is not officially sanctioned by either USEPA or the State of New Jersey, though it has been used by both on an unofficial basis for the purpose described herein. The applicability at MOTBY is questionable given the manmade character of the peninsula.

5.2.4 Quality Control Sample Analyses

Four trip blank and two field blank water samples were submitted as quality control samples during the RI field effort. The trip blank water was provided by the laboratory in sealed 80-ml vials that were returned to the laboratory unopened for VOC analyses. The two field blanks consisted of distilled water analyzed prior to the start of the field effort and approved for use as rinse water for the sampling equipment. The water was passed through new unused bailers, peristaltic pump tubing, and filters similar to the field sampling methodology, as appropriate. Field blank samples were analyzed for metals, volatile organic compounds, base-neutral/acid extractable organic compounds, and oil and grease (only the August 5, 1988, sample). The laboratory data for the quality control samples are included in Appendix C.

Several analytes were detected in five of the six samples submitted to the laboratory. The analytical results of the field blank collected on August 5, 1988, indicated detections of six analytes--mercury (0.615 ug/l), lead (5.08 ug/l), iron (161 ug/l), zinc (29.9 ug/l), acetone (39,000 ug/l), and oil and grease (7,400 ug/l). Three analytes were detected in the field blank collected on August 8, 1988--zinc (18.8 ug/l), acetone (560 ug/l), and total unknown organics (67.17 ug/l). Two analytes were detected in the trip blank submitted on August 3, 1988--acetone (12.0 ug/l) and total unknown organics (119.4 ug/l). No VOCs were detected in the August 5, 1988, trip blank. The analyses of the August 17, 1988, trip blank resulted in nine unknown volatiles being detected, with a total concentration of 1,184.3 ug/l. The August 18, 1988, trip blank results showed detection of 11 unknown volatiles, with a total concentration of 360.2 ug/l.

These data indicate that site collected groundwater and surface water samples may have some analytes attributed to them that may not be representative of site conditions (i.e., acetone, oil and grease, and unknown volatiles).

5.3 NATURE AND EXTENT OF CONTAMINATION

5.3.1 Site 1, Landfill, and Site 2, Former Naval Storage Area

5.3.1.1 Investigative Program. Sites 1 and 2 are close to each other and affect (and are influenced by) the same hydrogeologic environment. For this reason, the investigative program addresses both sites together. The groundwater beneath the two sites was investigated using 13 monitoring wells that were installed immediately upgradient, downgradient of the sites, and at a distance to collect background data. Both shallow and deeper aquifer wells were installed to investigate two aquifer regimes. The 13 groundwater samples were analyzed for volatile organic compounds (VOCs), base-neutral/acid extractable organic compounds (BNAs), and pesticides from the Target Compound List (TCL). Groundwater samples were also analyzed for polychlorinated biphenyls (PCBs), metals included in the list of primary and secondary drinking water standards (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Se, Ag, and An), sulfate, and oil and grease. A library search for VOCs and BNAs/pesticides/PCBs not included in the TCL was also conducted on all Site 1 and 2 samples.

Four surface water and sediment samples were collected from areas considered representative of conditions associated with Site 1. A duplicate sample of one surface water sample was also submitted for chemical analysis. All surface water and sediment samples were subjected to the same laboratory analyses as the groundwater samples. One groundwater sample (DM-9) and one surface water sample (ISW3) were also analyzed for cyanide.

Six soil samples were collected for the specific purpose of characterizing Site 2 surface soil conditions. Five samples were collected from within the site boundaries, and one sample (2SS1) was collected from an area along the western boundary of MOTBY to act as a background control sample. Each sample was analyzed for the same parameters as other Site 1 and 2 samples, except that cyanide was added to the analytical program for soil sample 2SS6.

5.3.1.2 Analytical Results and Data Evaluation. A summary of the groundwater, surface water, sediment, and soil samples collected at Sites 1 and 2 are presented in Tables 5-2, 5-3, 5-4, 5-5, and 5-6, respectively, along with results of chemical analyses. Metals, sulfate, cyanide, and oil and grease results are included on the tables regardless of whether detected; but only the VOCs or BNAs/pesticides/PCBs that were detected in Site 1 or 2 samples are listed. Where the constituent was

TABLE 5-2
Groundwater Sampling Analytical Results
Site 1, Landfill and Site 2, Former Naval Storage Area
MOTBY, New Jersey

Analyte	Sample:	DM-1	DM-2	DM-3	DM-4C	DM-5	DM-6	DM-7	DM-8	DM-9	DM-10	DM-11	DM-12	DM-13	Criteria ug/l (a)
VOLATILE ORGANICS (ug/l)															
Acetone		<10.0	120	<10.0	<10.0	<10.0	14.0	53.0	<10.0	<10.0	<10.0	<10.0	8.0	<10.0	NC(c)
Bromodichloromethane		<1.80	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	NC
Carbon disulfide		<5.00	430	<5.00	<5.00	<5.00	<5.00	14	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	NC
Chlorobenzene		<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	NC
Chloromethane		<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	NC
Methylene chloride		<23.0	39.1	<23.0	<23.0	<23.0	<23.0	<23.0	<23.0	<20.00	<23.0	<23.0	<23.0	<23.0	NC
BNA EXTRACTABLES (ug/l)															
Acenaphthene		7.64	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30	26.4	<1.30	<1.30	<1.30	<1.30	NC
Anthracene		<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	NC
Benzoic acid		<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	87.5	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	NC
Benzo(a)anthracene		<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	<0.830	NC
Benzo(a)pyrene		<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	<4.50	NC
Benzo(b)fluoranthene		<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40	NC
Benzo(g,h,i)perylene		<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	<38.0	NC
Benzo(k)fluoranthene		<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	<2.90	NC
Chrysene		<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NC
Dibenzofuran		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	16.6	<10.0	<10.0	<10.0	<10.0	NC
Di-n-butyl phthalate		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NC
Fluoranthene		<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	2.95	<1.20	<1.20	<1.20	<1.20	NC
Fluorene		3.44	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	18.5	<10.0	<10.0	<10.0	<10.0	NC
Indeno(1,2,3-c,d)pyrene		<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	<86.0	NC
Naphthalene		<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	16.1	<4.00	<4.00	<4.00	<4.00	NC
Phenanthrene		2.63	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	20.4	<0.850	<0.850	<0.850	<0.850	NC
Pyrene		<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	NC
2-methyl naphthalene		33.1	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	215	<10.0	<10.0	<10.0	<10.0	NC
4-Chlorophenyl ether		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NC
4-methyl phenol		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NC
METALS - TOTAL (ug/l)															
Antimony		NA(b)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Arsenic		19.5	9.51	15.1	280	6.3	9.44	266	<2.92	4.79	10.1	32	11.1	5.88	50
Barium		138	457	335	2500	712	107	274	50.5	165	47.6	406	49.5	60.6	1000
Beryllium		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Cadmium		5.69	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	<4.09	10
Chromium		4.80	5.00	13.0	723	<4.44	<4.44	<4.44	<4.44	6.60	10.1	37.1	9.40	<4.44	50
Copper		<6.20	<6.20	136	1150	52.2	211	<6.20	<6.20	14.1	38.8	61.4	10.6	<6.20	1000
Iron		45000	159	19000	790000	6500	4380	438	4650	27000	3980	87000	8600	11000	300
Lead		10.7	4.49	32.0	600	79	19	2.6	4.11	14.4	12.1	16.9	18.2	3.37	50
Manganese		1460	3.04	4900	8800	217	536	15.2	1100	765	558	4100	170	834	50
Mercury		0.702	0.75	0.663	<0.10	0.875	0.5	0.683	0.615	0.788	0.74	0.644	0.702	0.74	2
Nickel		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Selenium		<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	<98.6	10
Silver		<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	<5.56	50
Thallium		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NC
Zinc		44.4	48.6	127	2300	215	159	34.7	37.3	62.1	138	185	64	87.7	5000
MISCELLANEOUS (ug/l)															
Cyanide		NA	NA	NA	NA	NA	NA	NA	NA	<5.0	NA	NA	NA	NA	500
Sulfate		223	5900	59000	4900	<223	<223	<223	<223	1000	5500	<223	33000	<223	250000
Oil and grease		<5000	20100	8650	11800	6500	9300	6500	6600	6400	<5000	11000	10600	10800	NC

(a) Maximum Contaminant Level (MCL) or State groundwater criteria.
(b) NA = Not analyzed for.
(c) NC = NO criteria available.

TABLE 5-3
Surface Water Sampling Analytical Results
Site 1, Landfill
MOTBY, New Jersey

Analyte	Sample:	1SW1	1SW2	1SW3	1SW3 (DUP)	1SW4	Criteria ug/l
VOLATILE ORGANICS (ug/l)							
Acetone		<10.0	<10.0	<10.0	<10.0	150	NC(a)
Bromodichloromethane		15.0	<5.00	<5.00	<5.00	<5.00	NC(a)
Carbon disulfide		<5.00	<5.00	<5.00	<5.00	<5.00	NC(a)
Chlorobenzene		<1.20	<1.20	<1.20	<1.20	<1.20	NC(a)
Chloromethane		33.8	<1.80	<1.80	<1.80	<1.80	NC(a)
Methylene chloride		36.1	<23.0	<23.0	<23.0	<23.0	NC(a)
BNA EXTRACTABLES (ug/l)							
Acenaphthene		<1.30	<1.30	13.9	11.1	<1.30	710(b)
Anthracene		<1.10	<1.10	<1.10	<1.10	<1.10	300(c)
Benzoic acid		<50.0	<50.0	<50.0	<50.0	<50.0	NC
Benzo(a)anthracene		<0.830	<0.830	<0.830	<0.830	<0.830	300(c)
Benzo(a)pyrene		<4.50	<4.50	<4.50	<4.50	<4.50	300(c)
Benzo(b)fluoranthene		<2.40	<2.40	<2.40	<2.40	<2.40	NC
Benzo(g,h,i)perylene		<38.0	<38.0	<38.0	<38.0	<38.0	NC
Benzo(k)fluoranthene		<2.90	<2.90	<2.90	<2.90	<2.90	NC
Chrysene		<1.00	<1.00	<1.00	<1.00	<1.00	NC
Dibenzofuran		<10.0	<10.0	5.00	4.00	<10.0	NC
Di-n-butyl phthalate		<10.0	<10.0	<10.0	<10.0	<10.0	NC
Fluoranthene		<1.20	<1.20	<1.20	<1.20	<1.20	NC
Fluorene		<10.0	<10.0	7.00	<10.0	<10.0	NC
Indeno(1,2,3-c,d)pyrene		<86.0	<86.0	<86.0	<86.0	<86.0	300(c)
Naphthalene		<4.00	<4.00	4.85	4.42	<4.00	2350(d)
Phenanthrene		<0.850	<0.850	<0.850	<0.850	<0.850	NC
Pyrene		<12.0	<12.0	<12.0	<12.0	<12.0	NC
2-Methyl naphthalene		<10.0	<10.0	<10.0	<10.0	<10.0	NC
2-Methyl phenol		<10.0	<10.0	37.0	<10.0	<10.0	NC
4-Chlorophenyl ether		<10.0	<10.0	<10.0	6.00	<10.0	NC
METALS - TOTAL (ug/l)							
Antimony		NA	NA	NA	NA	NA	NC
Arsenic		<2.92	19.9	10.8	5.97	6.21	13/36(b)
Barium		31.7	410	981	533	15.9	NC
Beryllium		NA	NA	NA	NA	NA	NC
Cadmium		<4.09	<4.09	<4.09	<4.09	<4.09	4.5(d)
Chromium		12.3	<4.44	<4.44	<4.44	<4.44	50(e)
Copper		17.6	22.8	128	38.9	<6.20	2.9(b)
Iron		429	63000	190000	88000	576	300(e)
Lead		10.2	12.5	130	31	2.4	5.6(b)
Manganese		127	1330	1090	873	64.2	50(e)
Mercury		<0.100	<0.100	0.760	0.220	<0.100	.025(b)
Nickel		NA	NA	NA	NA	NA	NC(b)
Selenium		<98.6	<98.6	<98.6	<98.6	<98.6	10(e)
Silver		<5.56	<5.56	<5.56	<5.56	<5.56	2.3(d)
Thallium		NA	NA	NA	NA	NA	NC
Zinc		81.3	115	432	159	23.6	58(d)
MISCELLANEOUS (ug/l)							
Cyanide		NA	NA	<5.00	NA	NA	1.0(b)
Sulfate			490	216	267	610000	250000(b)
Oil and grease		<5000	9200	9000	48900	22400	NN(f)

(a) NC = No criteria available.
(b) FAWQC = Federal ambient water quality criteria (chronic marine).
(c) New Jersey salt water criteria; value is total concentration of all PAHs.
(d) New Jersey salt water criteria.
(e) Maximum Contaminant Level (MCL).
(f) NN = non-noticeable.

TABLE 5-4
Sediment Sampling Analytical Results
Site 1, Landfill
MOTBY, New Jersey

Analyte	Sample:	1SE1	1SE2	1SE3	1SE4	Typical Soil Concentration Range(a) (ug/kg)	
						Mean	Upper Range
VOLATILE ORGANICS (ug/kg)							
Acetone		317.0	34	<10	<10		
Bromodichloromethane		<5	<5	<5	<5		
Carbon disulfide		<5	<5	<5	<5		
Chlorobenzene		<2	<2	4.5	<2		
Chloromethane		<4.5	<4.5	<4.5	<4.5		
methylene chloride		<10	<10	<10	<10		
BNA EXTRACTABLES (ug/kg)							
Acenaphthene		<340	<340	2270	379		
Anthracene		<290	<290	4980	544		
Benzoic acid		<2000	<2000	<2000	<2000		
Benzo(a)anthracene		668	<270	7230	1440		
Benzo(a)pyrene		850	<160	6710	1360		
Benzo(b)fluoranthene		912	<250	5980	791		
Benzo(g,h,i)perylene		<520	<520	5160	<520		
Benzo(k)fluoranthene		823	<220	<220	<220		
Chrysene		853	<190	8250	2340		
Dibenzofuran		<330	<330	2590	<330		
Di-n-butyl phthalate		<330	<330	<330	479		
Fluoranthene		970	<210	2300	3440		
Fluorene		<330	<330	3300	<330		
Indeno(1,2,3-c,d)pyrene		<450	<450	<450	<450		
Naphthalene		<280	<280	1360	<280		
Phenanthrene		<1600	<1600	<1600	3140		
Phenol		NA	NA	NA	NA		
Pyrene		715	<530	10300	<530		
2-Methyl naphthalene		<330	<330	<330	<330		
2-Methyl phenol		<330	<330	<330	<330		
4-Chlorophenyl ether		<330	<330	<330	<330		
METALS - TOTAL (ug/kg)							
Antimony		5640	<373	<373	4650	760	8800
Arsenic		18500	13400	17900	41000	7400	10000
Barium		70000	34800	150000	40200	420000	1500000
Beryllium		<331	<331	1020	885	850	7000
Cadmium		1590	<951	<951	1730		
Chromium		18800	<9310	21400	93000	52000	1000000
Copper		310000	45500	<6290	130000		
Iron		7000000	7200000	26000000	16000000	22000	700000
Lead		316000	<92300	<92300	221000	17000	300000
Manganese		<292000	<292000	<292000	<292000		
Mercury		4200	110	283	332	120	3400
Nickel		14400	10400	20000	33300	18000	700000
Selenium		<92400	<92400	<92400	<92400	450	3900
Silver		<699	<699	<699	<699		
Thallium		<67600	<67600	<67600	<67600	8600	23000
Zinc		470000	83800	320000	<8380	52000	2900000
MISCELLANEOUS (ug/kg)							
Cyanide		NA	NA	NA	NA		
Sulfate		<14000	109000	65100	820000		
Oil and grease		779000	571000	<5000000	3070000		

(a) Mean/upper range of typical regional soil concentrations (USGS, 1984).

TABLE 5-5
Soil Sampling Analytical Results
Site 2, Former Naval Storage Area
MOTBY, New Jersey

Analyte	Sample:	2SS1	2SS2	2SS3	2SS4	2SS5	2SS6	2SS6 (DUP)	Typical Soil Concentration Range(a) ug/kg	
									Mean	Upper Range
VOLATILE ORGANICS (ug/kg)										
Acetone		<10	<10	<10	<10	<10	<10	<10		
Bromodichloromethane		<10	<10	<10	<10	<10	<10	<10		
Carbon disulfide		<10	<10	<10	<10	<10	<10	<10		
Chlorobenzene		<10	<10	<10	<10	<10	<10	<10		
Chloromethane		<10	<10	<10	<10	<10	<10	<10		
Methylene chloride		<10	<10	<10	<10	<10	<10	<10		
BNA EXTRACTABLES (ug/kg)										
Acenaphthene		<340	<340	<340	445	415	<340	<340		
Anthracene		<340	<340	<340	1100	1100	<340	<340		
Benzoic acid		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Benzo(a)anthracene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Benzo(a)pyrene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Benzo(b)fluoranthene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Benzo(g,h,i)perylene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Benzo(k)fluoranthene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Chrysene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Dibenzofuran		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Di-n-butyl phthalate		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Fluoranthene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Fluorene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Indeno(1,2,3-c,d)pyrene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Naphthalene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Phenanthrene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
Pyrene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
2-Methyl naphthalene		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
2-Methyl phenol		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
4-Chlorophenyl ether		<2000	<2000	<2000	<2000	<2000	<2000	<2000		
METALS - TOTAL (ug/kg)										
Antimony		<373	<373	24000	NA	NA	NA	NA	760	8800
Arsenic		35000	85000	42000	6000	12000	25000	<2220	7600	10000
Barium		<7280	100000	130000	98000	510000	26600	25200	420000	1500000
Beryllium		<545	864	60	NA	NA	NA	NA	850	7000
Cadmium		<951	<951	1510	5950	<951	<951	<951		
Chromium		15400	11600	26700	18800	73400	15800	13900	52000	1000000
Copper		37200	42600	430000	120000	1100000	40700	36700		700000
Iron		11000000	29000000	130000000	380000000	1500000000	1600000000	1500000000	22000	100000
Lead		110000	<92300	560000	NA	NA	NA	NA	17000	300000
Manganese		<292000	<292000	<292000	<292000	891000	<292000	<292000	640000	7000000
Mercury		130	421	650	1400	220	<179000	<179000	120	4700
Nickel		11200	26300	39000	NA	NA	NA	NA	18000	700000
Selenium		<92400	<92400	<92400	<92400	<92400	<92400	<92400	450	3900
Silver		<699	<699	<699	<699	<699	<699	<699		
Thallium		<67600	<67600	<67600	NA	NA	NA	NA	8600	23000
Zinc		670000	1000000	1400000	310000	5300000	93500	113000	52000	2900000
MISCELLANEOUS (ug/kg)										
Cyanide		NA	NA	NA	NA	NA	<19800	NA		
Sulfate		21200	43800	260000	28800	17400	40700	28700		
Oil and grease		599000	287000	2590000	<5000000	<5000000	<5000000	<5000000		

(a) Mean/upper range of typical regional soil concentrations (USGS, 1984).

TABLE 5-6
Historical Sampling Analytical Results
Site 1, Landfill
MOTBY, New Jersey

Analyte	Sample: 1SW3		Storm Sewer		1SE3	
	Date:	May 1976	March 1984	March 1984	March 1984	March 1984
	Unit:	ug/l	ug/l	ug/l	ug/l	ug/kg
VOLATILE ORGANICS						
Acetone		NA(a)	NA	NA	NA	NA
Bromodichloromethane		NA	ND(b)	ND	ND	ND
Carbon disulfide		NA	NA	NA	NA	NA
chlorobenzene		NA	ND	ND	ND	ND
chloromethane		NA	ND	ND	ND	ND
Methylene chloride		NA	ND	ND	ND	ND
BNA EXTRACTABLES						
Acenaphthene		NA	10000	<10		200
Anthracene		NA	<10	<10		<200
Benzoic acid		NA	NA	NA		NA
Benzo(a)anthracene		NA	<10	<10		<200
Benzo(a)pyrene		NA	<10	<10		<200
Benzo(b)fluoranthene		NA	<10	<10		<200
Benzo(g,h,i)perylene		NA	<25	<25		<500
Benzo(k)fluoranthene		NA	<10	<10		<200
Chrysene		NA	<10	<10		<200
Dibenzofuran		NA	<10	<10		<200
Di-n-butyl phthalate		NA	<10	<10		<10
Fluoranthene		NA	<10	<10		500
Fluorene		NA	<10	<10		300
Indeno(1,2,3-c,d)pyrene		NA	<25	<25		<500
Naphthalene		NA	<10	<10		500
Phenanthrene		NA	<10	<10		400
Phenol		NA	<10	<10		10
Pyrene		NA	<10	<10		400
2-Methyl naphthalene		NA	NA	NA		NA
2-Methyl phenol		NA	NA	NA		NA
4-Chlorophenyl ether		NA	<200	<200		<200
METALS - TOTAL						
Antimony		NA	<10	<10		<10*
Arsenic		NA	<10	<10		<4000
Barium		NA	<300	300		<120000
Beryllium		NA	<500	<500		<20000
Cadmium		12-35**	25	11		<4000
Chromium		NA	<25	<25		22000
Copper		41-63	<25	<25		298000
Iron		14130-18940	8960	5160		12188000
Lead		23-80	<200	<200		128000
Manganese		NA	<500	464		160000
Mercury		NA	<0.2	<0.2		440
Nickel		NA	<100	<100		44000
Selenium		NA	<5	<5		2000
Silver		NA	<25	<25		<10000
Thallium		NA	<1	<1		<400
Zinc		NA	23	19		31600
MISCELLANEOUS						
Cyanide		NA	<100	<100		60*
Sulfate		NA	<1000	64000		15000*
pH (units)		7.2	6.7	6.8		6.8
Conductivity (umhos/cm2)		7350-10800**	1530	1650		720

**Range of four samples

(a) NA = Not analyzed for.
(b) ND = Not detected.

detected at one location, concentrations in the surrounding media are also reported for comparison, even if results were below detection.

Surface water and sediment samples taken at the spring east of Site 1 in 1984 and sampling results for the spring sample collected in 1976 were documented in a previous study (USAEHA, 1984). A summary of these data is presented in Table 5-6.

The analytical results for the groundwater, surface water, sediment, and soil samples are discussed separately below. Chemical results were evaluated to identify exceedances of applicable Federal or State water quality standards or criteria. The criteria that apply to the detected analytes are presented on the appropriate tables along with the chemical results for comparison. A complete listing of the 1988 RI field program analytical results is provided in Appendix C. The relevant criteria for comparison of analytical data for the groundwater samples are Federal and State drinking water MCLs. State MCLs are identical to Federal primary and secondary drinking water MCLs.

5.3.1.2.1 Groundwater. Thirteen groundwater samples were submitted for analyses of four general analyte categories--VOCs, BNAs/pesticides/PCBs, metals (total), and miscellaneous indicator parameters or inorganic compounds.

As shown in Table 5-2, three VOCs on the TCL were detected in four of the 13 samples--DM-2, DM-6, DM-7, and DM-12. Two of these VOCs--acetone and methylene chloride--are common laboratory artifacts due to residual concentrations remaining in the laboratory equipment after cleaning operations and/or are used as a spiking compound, and concentrations are not likely representative of site conditions. Acetone was detected in three quality control samples. The third VOC--carbon disulfide--was present in only the groundwater samples collected from wells DM-2 and DM-7. This compound is considered to be present in the sampled groundwater unit. Wells DM-2 and DM-7 are both deep wells; they were installed into the loose, very permeable sand and gravel aquifer that was found to be hydrologically separate from the shallow aquifer directly impacted by the landfill. Carbon disulfide is considered to be a naturally occurring compound that forms from the decomposition of organic matter. There is no Federal or State MCL for this compound.

Several BNAs/pesticides/PCBs were detected in four of the 13 groundwater samples--from wells DM-1, DM-7, DM-9, and DM-13. There are no Federal or State MCLs for any of the detected analytes. Eight BNA analytes from the TCL were detected--seven analytes were detected in DM-9 and four in DM-1. Benzoic acid was detected in the groundwater sample from DM-7 at a concentration of 87.5 ug/l. Well DM-7 is a deep well that is hydrologically separated from the landfill. The detected concentration only slightly exceeded the detection limit of 50.0 ug/l. No Federal or State MCL exists for this analyte.

Of the four BNA analytes detected in DM-1, the maximum constituent concentration was 33.1 ug/l of 2-methyl naphthalene. The three other analytes were all detected at less than 8 ug/l. Well DM-1 is situated hydrologically upgradient of both Sites 1 and 2. This location was selected as a background sampling point, to provide data for comparison to the water quality of wells located downgradient of Sites 1 and 2. Since no TCL BNAs were detected in the Site 2 downgradient well samples from DM-5 and DM-6, the analytes detected in sample DM-1 do not appear to be representative of site conditions.

Seven TCL BNAs/pesticides/PCBs were detected in the groundwater sample collected from well DM-9, the well installed immediately downgradient of Site 1. One analyte--2-methyl naphthalene--was detected at a concentration of 215 ug/l, but the other six analytes detected were found at concentrations of less than 27 ug/l. Because 2-methyl naphthalene was detected in well DM-1 and DM-9, but not in wells DM-5 and DM-6, it is unlikely that results in DM-1 are indicative of contaminant migration. It is more probable that this compound is related to the type of solid fill used to construct MOTBY, and not to wastes disposed of at Site 1.

Ten of the 12 metals analyzed for in the groundwater samples collected were detected. Federal MCLs exist for six of the detected metals, with State MCLs (equal to Federal secondary MCLs) available for the other four metals. Only the concentrations of barium (2,500 ug/l), arsenic (280 ug/l), chromium (723 ug/l), and lead (600 ug/l) in groundwater sample DM-4C, and lead (79.0 ug/l) in well DM-5, exceeded Federal MCLs. State MCLs were exceeded for copper, iron, or manganese in 12 of the 13 samples, but the State MCL for copper was only exceeded in DM-4C. Since Site 1 is located downgradient of DM-4C, the high concentrations of metals detected in DM-4C--such as copper (1,150 ug/l), chromium (723 ug/l), and manganese (8,800 ug/l)--indicate that a local source is

responsible, which does not appear to be related to Site 1. The local source has been tentatively identified as a submerged barge. This barge, evident on historical aerial photography, may have been used as a stabilizer for the hydraulic filling of the area west of Site 1, or as a means to reduce erosion prior to hydraulic filling. Historical aerial photographs of this area (USEPA, 1987) show many submerged barges to have been present throughout the western end of MOTBY prior to landfilling.

The groundwater samples were also analyzed for two miscellaneous parameters--sulfate and oil and grease. One sample, DM-9, was also tested for cyanide. Cyanide was not detected in sample DM-9; sulfate concentrations were found to be below the State MCL. Oil and grease was found at low concentrations in 11 of the 13 samples, but the three highest concentrations were detected in three deep wells (DM-2, DM-4C, and DM-11).

5.3.1.2.2 Surface Water. Four surface water locations were selected for sampling during the 1988 RI field program, the analytical results of which are presented in Table 5-3. One sample (ISW1) was collected from an area considered as a background location to Site 1--a pool of water located east of the Bachelor Officers' Quarters (BOQ). Surface water drainage in this area, however, is probably due to seepage from the MOTBY potable water reservoir or to seepage from BOQ septic systems. A standing water body located northwest of Site 1, but within the landfill area, was also sampled (ISW2). It was thought that this sample would be representative of surface water drainage and possibly groundwater discharge from the landfill. The spring located east of Site 1 (see Figure 2-3) was sampled (ISW3) and is considered representative of groundwater quality discharging from the east side of the landfill. The fourth surface water sample (ISW4) was collected at low tide from the storm sewer outfall emptying into the North Channel. (The outfall is submerged during high tide.) Even at low tide, the storm sewer was partially submerged, and results are influenced by the water quality of the North Channel. A duplicate sample of ISW3 was also submitted for chemical analyses. Federal and State saltwater criteria are considered the appropriate criteria for comparison to the surface water quality results.

Four VOCs from the TCL were detected in surface water samples collected from Site 1--three in sample ISW1 and one in sample ISW4. The VOCs detected in sample ISW1 were bromodichloromethane (15.0 ug/l), chloromethane (33.8 ug/l),

and methylene chloride (36.1 ug/l). The VOC detected in sample 1SW4 was acetone (150 ug/l). There are no Federal or State saltwater criteria for these VOCs. Acetone and methylene chloride are common laboratory artifacts and are not considered representative of conditions at the site. The other two VOCs were present in the background sample (1SW1) and can be attributed to offsite sources, independent of either Site 1 or Site 2. No VOCs were detected in the limited surface water sampling performed prior to 1988 (see Table 5-6). Available data indicate that no VOC contamination, attributable to either Site 1 or Site 2, is present.

Six BNAs/pesticides/PCBs were detected at sample location 1SW3, from the spring located east of Site 1. A duplicate sample was taken at this location during the 1988 field program; analytical results for the two samples are similar. Five BNAs were detected in 1SW3, and four analytes were detected in the duplicate. Three of these analytes were detected in both samples. No BNAs were detected in the other three surface water samples. 2-Methyl phenol, detected in sample 1SW3, was found at the highest BNA concentration of 37.0 ug/l. Two of the six analytes detected have Federal or State saltwater criteria--acenaphthene (Federal and State criteria of 710 ug/l) and naphthalene (State criteria of 2,350 ug/l). The detected concentrations for these two analytes are significantly below these criteria. The four detected analytes without regulatory criteria (dibenzofuran, fluorene, 2-methyl phenol, and 4-chlorophenyl ether) were found in similar concentrations.

All surface water samples were analyzed for the 12 metals included in the Federal primary and secondary drinking water standards. Nine metals (arsenic, barium, chromium, copper, iron, lead, manganese, mercury, and zinc) were detected in at least one sample, and three metals (cadmium, selenium, and silver) were not detected in any sample (see Table 5-3). Five of the detected metals (arsenic, copper, lead, mercury, and zinc) have Federal or State criteria, with each criterion being exceeded in at least one sample. The concentrations of copper, lead, manganese, and zinc in the background sample (1SW1) exceeded surface water criteria. Landfill sample 1SW2 exceeded surface water criteria for copper, lead, iron, manganese, zinc, and arsenic if all detected arsenic ions had a valence of +3. The spring sample (1SW3) and the duplicate showed concentrations to exceed standards for copper, lead, iron, manganese, mercury, and zinc. Only manganese

and zinc concentrations exceeded standards in the storm sewer outfall sample (1SW4). Metal concentrations were also compared to Federal and State MCLs. Concentrations of iron and manganese in each sample exceeded the MCLs. Barium was detected in 1SW3 and the duplicate of sample 1SW3 at concentrations of 981 ug/l and 533 ug/l, respectively, below the MCL.

5.3.1.2.3 Sediment. Four sediment samples were collected at Sites 1 and 2 at the same locations as the surface water samples. They were analyzed for the same analytical parameters as other Site 1 and 2 samples.

Of the TCL VOCs, only acetone and chlorobenzene were detected in the sediment samples. Acetone is likely a laboratory artifact and not representative of conditions at the site. Chlorobenzene was detected in spring sample 1SE3 at a concentration of 4.5 ug/l.

Fourteen BNAs were detected in sampled sediments at Site 1. As shown in Table 5-3, seven BNAs were detected in 1SE3. Seven BNAs were detected in sample 1SE1 and eight BNAs in sample 1SE4 (see Table 5-4). The highest concentrations of BNAs were detected in 1SE3. BNAs were not detected in sample 1SE2. Of the six BNAs detected in surface water at the spring (1SW3), four were also detected in the sediment. Four of the BNAs detected at 1SE3 were also detected in the 1984 sample collected from the same location; 1988 concentrations were significantly higher.

Of the six metals tested for in site sediments, manganese, selenium, and thallium were not detected. Concentrations of arsenic, chromium, and nickel appeared to be higher than background in 1SE4, though concentrations could be influenced by both the storm sewer conduit and the North Channel and not likely elevated as a result of site conditions. Measured concentrations for chromium and nickel are still within the range of values typical for soils of the eastern United States and New Jersey.

Oil and grease concentrations detected in the sediment samples ranged from 571 ug/g to 3,070 ug/g, and sulfate concentrations ranged from below a detection limit of 14.0 ug/g to 820 ug/g in sample 1SE4.

5.3.1.2.4 Soil. Six near-surface soil samples and a duplicate were collected and analyzed for evaluation of Site 2. No TCL VOCs were detected in any of the seven samples. BNAs were detected in four of the samples, as shown in Table 5-5. Four

BNAs were detected in sample 2SS3, eight in 2SS4, 10 in 2SS5, and two in 2SS6. The two BNAs detected in 2SS6 were not detected in the duplicate sample taken at this location.

Sixteen metals were tested for in the soil samples. As with the sediment samples, only manganese, selenium, and thallium were not detected in any samples. Arsenic concentrations in five of six samples and the lead concentration in 2SS3 appear to be higher than naturally occurring concentrations, though one of the elevated arsenic concentrations was observed in sample 2SS1, the background sample. Therefore, arsenic concentrations in the soil (with the possible exception of 2SS2) do not appear to be attributable to the site. Iron concentrations appear to be significantly higher than background (2SS1) or typical values reported for soils in the eastern United States and New Jersey.

5.3.1.3 Summary. Criteria were exceeded for arsenic, barium, copper, chromium, iron, lead, and manganese in groundwater sample DM-4C; for iron, lead, and manganese in DM-5; for arsenic and iron in DM-7; and for iron and manganese in DM-1, DM-3, DM-6, DM-8, DM-9, DM-10, DM-11, DM-12, and DM-13. Because of their widespread occurrence, the iron and manganese exceedances appear to be directly attributable to Site 1 or 2 contaminants. The metal contaminants detected in well DM-4C are likely due to very local conditions related to the submerged barge upon which this well was installed and are probably not directly related to potential Site 1 contaminants. Surface water data have exceeded Federal or State saltwater quality criteria for arsenic, copper, iron, lead, manganese, mercury, and zinc--although a surface water sample not influenced by either Site 1 or Site 2 showed exceedances for copper, lead, iron, and zinc. Criteria were exceeded for iron and manganese in all surface water samples, which suggests that at least iron and manganese concentrations likely represent natural variability. In general VOCs, do not appear to be a problem in media at Sites 1 and 2. A number of BNAs, however, have been detected in all sampled media; it appears that at least some of the BNAs detected are related to Sites 1 and 2.

5.3.1.4 Migration Potential. Contaminants present at Site 1 would migrate from the site with the shallow aquifer groundwater toward the North Channel. The well adjacent to the landfill on the north side (DM-9) provided a water sample contaminated with a number of VOCs, but no volatile organic contaminants were

detected in the water sample collected from the well located further downgradient (DM-10) of Site 1. This indicates that the contaminants are contained at the landfill, or that they were diluted to undetectable concentrations. Flow toward the South Channel is possible--but since no organic contaminants were found in the downgradient well adjacent to the landfill in this direction (DM-8), it does not appear to be a likely groundwater contaminant migration route.

Migration into the deeper aquifer does not appear to be occurring, since no landfill associated organic contaminants were detected in the deeper aquifer groundwater samples. The aquifer characterization data (Section 3.5) indicate that the shallow and deep aquifers are hydrologically separate, and that any potential shallow contaminants will not migrate vertically in the future. Deeper groundwater is also connected to the Upper New York Bay, and migration to other land areas is not expected to occur; rather, discharge would be into the bay.

5.3.2 Site 3, Underground Storage Tanks

5.3.2.1 Investigative Program. Nine tank samples were collected as part of the MOTBY RI field program. With the exception of a sludge sample collected from Tank 19, all tank samples were of a liquid matrix. The analytical program for the tank samples collected is shown in Table 5-7. Samples were analyzed for one or more of the following--VOCs, BNAs, metals, total petroleum hydrocarbons (TPHCs), oil and grease, and "finger printing" to identify the type of fuel. Samples were collected to identify tank contents and constituents that could migrate from the tanks. The exit valve for the propane tank (23) was sampled with a draeger tube for TPHC vapors. Media surrounding the tanks were not sampled as part of the field program, but such action may ultimately be warranted for tanks where contaminants were detected and the potential for leakage exists.

5.3.2.2 Analytical Results and Data Evaluation. A summary of the samples collected is presented in Table 5-7 along with chemical analysis results. For VOCs and BNAs, only analytes detected in the sampled media are shown. A complete listing of analytical results is provided in Appendix C.

Several VOCs were detected in samples from Tanks 17, 19, and 21, as shown in Table 5-6. Ethyl benzene and xylene--detected in sample 3T17--are fuel components. No TPHCs were detected in the sample. Concentrations of VOCs and TPHCs were below detection in sample 3T18. Three BNAs--dibenzofuran, N-nitro-

TABLE 5-7
Groundwater Sampling Analytical Results
Site 3, Underground Storage Tanks
MOTBY, New Jersey

Analyte	Sample: Matrix: Units:	Tank Liquids								Tank Sludge
		3T7	3T9	3T10	3T17	3T18	3T20	3T21	3T22	3T19
		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Sludge
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/kg
VOLATILE ORGANICS										
Acetone		NA	NA	NA	75	<10.0	<10.0	<10.0	<10.0	<10.0
Chloromethane		NA	NA	NA	<1.80	<1.80	<1.80	3.6	<1.80	40.8
Ethyl benzene		NA	NA	NA	36.1	<1.40	<1.40	24.1	<1.40	84.2
Methyl ethyl ketone		NA	NA	NA	<10.0	<10.0	<10.0	<10.0	<10.0	490
Methyl isobutyl ketone		NA	NA	NA	<10.0	<10.0	<10.0	<10.0	<10.0	62.1
Toluene		NA	NA	NA	<1.80	<1.80	<1.80	<1.80	<1.80	>100
Xylene		NA	NA	NA	153	<5.00	<5.00	45.0	<5.00	637
1,2-Dichloroethylene		NA	NA	NA	<2.20	<2.20	<2.20	8.45	<2.20	<6.1
Benzene		NA	NA	NA	<1.70	<1.70	<1.70	<1.70	<1.70	140
BNA EXTRACTABLES										
Acenaphthene		NA	NA	NA	NA	NA	<1.30	<1.30	<1.30	724
Anthracene		NA	NA	NA	NA	NA	<1.10	<1.10	<1.10	1310
Benzoic acid		NA	NA	NA	NA	NA	<50.0	<50.0	<50.0	6160
Benzo(a)anthracene		NA	NA	NA	NA	NA	<0.830	<0.830	<0.830	9440
Benzo(a)pyrene		NA	NA	NA	NA	NA	<4.50	<4.50	<4.50	10400
Benzo(b)fluoranthene		NA	NA	NA	NA	NA	<2.40	<2.40	<2.40	11000
Bis(2-ethylhexyl)phthalate		NA	NA	NA	NA	NA	<34.0	<34.0	<34.0	11000
Chrysene		NA	NA	NA	NA	NA	<1.00	<1.00	<1.00	14200
Dibenzofuran		NA	NA	NA	NA	NA	225	<10.0	<10.0	<330
Fluoranthene		NA	NA	NA	NA	NA	<1.20	<1.20	<1.20	8180
Fluorene		NA	NA	NA	NA	NA	<10.0	9.39	28300	790
Naphthalene		NA	NA	NA	NA	NA	<4.00	376	<4.00	1270
N-nitrosodiphenylamine		NA	NA	NA	NA	NA	114	9.62	315	<330
Phenol		NA	NA	NA	NA	NA	<10.0	<10.0	<10.0	3730
Pyrene		NA	NA	NA	NA	NA	<12.0	<12.0	<12.0	8060
2-Methyl naphthalene		NA	NA	NA	NA	NA	745	1320	7900	1190
4-Methyl phenol		NA	NA	NA	NA	NA	<10.0	<10.0	<10.0	10800
METALS - TOTAL										
Antimony		NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		NA	NA	NA	NA	NA	<2.92	<2.92	<2.92	1400
Cadmium		NA	NA	NA	NA	NA	<4.09	306	<4.09	29200
Chromium		NA	NA	NA	NA	NA	<4.44	<4.44	<4.44	149000
Copper		NA	NA	NA	NA	NA	36.7	4700	NA	NA
Iron		NA	NA	NA	NA	NA	8100	5200	NA	NA
Lead		6	210	5.55	NA	NA	9.61	630	21	1900000
Mercury		NA	NA	NA	NA	NA	NA	NA	NA	631
Zinc		NA	NA	NA	NA	NA	179	3000	65.9	720000
MISCELLANEOUS										
Oil and grease		NA	NA	NA	NA	NA	17300000	20900	389000	17700000
Total petroleum hydrocarbons		NA	74200	NA	<2000	<2000	NA	NA	NA	NA

OTHER

Propane vapor concentration exceeded 2,500 parts per million for sample 3T23, taken at an exit valve (opened) for Tank 23 using an indicator tube.

sodiphenylamine, and 2-methyl naphthalene--were detected in sample 3T20 at concentrations of 225, 114, and 745 ug/l, respectively. Copper, iron, lead, and zinc were also detected. The oil and grease concentration was 17,300 mg/l.

Four VOCs--chloromethane, ethyl benzene, xylene, and 1,2-dichloroethylene--were detected in sample 3T21. Four BNAs--fluorene, naphthalene, N-nitro sodiphenylamine, and 2-methyl naphthalene--and cadmium, copper, iron, lead, and zinc were also detected. Total cadmium and total lead concentrations were 306 ug/l and 630 ug/l, respectively. The concentration of oil and grease was relatively low at 20,900 ug/l.

No VOCs were detected in sample 3T22. Three BNAs--fluorene, N-nitro sodiphenylamine, and 2-methyl naphthalene--were detected at concentrations of 28,300, 315, and 7,900 ug/l, respectively. Total lead was at a concentration of 21 ug/l. Oil and grease was detected in the sample at a concentration of 389 mg/l.

Several VOCs and 15 BNAs were detected in the waste oil sludge sample (3T19) collected from Tank 19. It is likely that these constituents were solvents that were disposed of with the waste oil that accumulated in the sludge. Arsenic, cadmium, chromium, mercury, and zinc were detected at concentrations of 1.4, 2.92, 149.0, 1,900, 0.631, and 720 ug/g, respectively, indicating that metals have accumulated and are concentrated in the tank sludge. The concentration of oil and grease in the sample was 17,700 ug/g, which confirms the sludge as resulting from waste oil.

The TPHC vapor concentration for the propane tank sample (3T23) exceeded the effective range of the indicator tube. The tube measured up to 2,500 parts per million (ppm); the vapor concentration in the exit valve feed line exceeded this concentration.

5.3.3 Site 4, DRMO Drum Storage Area

5.3.3.1 Investigative Program. Six near-surface soil samples were collected at Site 4 for chemical analysis. As shown in Figure 2-12, three samples were collected from the storage area, and three samples were collected along the path of surface water runoff from the site. Results from samples 4SS4, 4SS5, and 4SS6 should be indicative of contaminant migration from Site 4 via surface runoff. Samples 4SS1, 4SS2, and 4SS3 were taken from beneath the asphalt cover. Samples collected from Site 4 were analyzed for TCL VOCs, BNAs, 16 metals, sulfate, and oil and grease.

5.3.3.2 Analytical Results and Data Evaluation. A summary of the samples collected is presented in Table 5-8 along with chemical analysis results and applicable standards. Only analytes detected in the sampled media are presented. Since there are no applicable Federal or State standards/criteria for soil, chemical results were evaluated to identify exceedances of background and typical values reported for soils in the eastern United States and New Jersey. A complete listing of analytical results is provided in Appendix C.

No TCL VOCs, except methylene chloride and acetone--likely laboratory artifacts--were detected in Site 4 soil samples. Two BNAs were detected in several samples. Dibenzofuran was detected in two (4SS4 and 4SS5) of the six samples collected. Because dibenzofuran was not detected in any site samples collected from beneath the asphalt, it is unlikely that this constituent is related to the site. 2-Methyl naphthalene, detected in four of the six sites, could be indicative of the waste oil reported to have been stored at the site. It could also be a component of the asphalt cover or fill material used in the construction of MOTBY.

Of the 15 metals tested for, seven--beryllium, cadmium, lead, manganese, selenium, silver, and thallium--were not detected in the six soil samples collected. None of the other metals (with the exception of arsenic) were detected at concentrations significantly different than background or concentrations higher than typical for soils. Arsenic concentrations ranged from 27.0 to 87.0 ug/g, with a background concentration of 35.0 ug/g (2SS1) and an upper range typical for soils in the eastern United States and New Jersey of 10.0 ug/g. Oil and grease concentrations ranged from 328 to 3,110 ug/g.

Although xylene, pentachlorophenol, and DDT were known to have been stored at Site 4, none of these constituents were detected in soil samples collected at the site. One constituent detected--2-methyl naphthalene--could be indicative of waste oil stored at the site, though other BNAs and high concentrations of heavy metals typically associated with waste oil were either not detected or were found at concentrations similar to background.

5.3.4 Site 5, Battery Acid Pit

5.3.4.1 Investigative Program. Two soil samples were collected for analysis from Site 5 during the 1988 RI field program. Sample 5SS1 was collected adjacent to the

TABLE 5-8
Soil Sampling Analytical Results
Site 4, DRMO Drum Storage Area
MOTBY, New Jersey

							Typical Soil Concentration Range(a) (ug/kg)		
Analyte	Sample:	4SS1	4SS2	4SS3	4SS4	4SS5	4SS6	Mean	Upper Range

VOLATILE ORGANICS (ug/kg)									

Acetone		<10.0	<10.0	215	<10.0	<10	<10		
Methylene chloride		<50	123	<50	<50	<50	<50		
BNA EXTRACTABLES (ug/kg)									

Dibenzofuran		<330	<330	<330	1060	430	<330		
2-Methyl naphthalene		<330	463	468	822	1050	<330		
METALS - TOTAL (ug/kg)									

Antimony		NA(b)	NA	NA	NA	NA	NA	760	8800
Arsenic		53000	74000	36000	59000	87000	27000	7400	10000
Barium		23200	96000	39700	34800	<7980	23000	420000	1500000
Beryllium		<331	<331	<331	<331	<331	<331	850	7000
Cadmium		<951	<951	<951	<951	<951	<951		
Chromium		<9310	20700	<9310	<9310	10900	<9310	52000	1000000
Copper		14700	<6290	30600	26000	31400	18000		
Iron		15000000	13000000	17000000	10000000	14000000	8200000	22000	700000
Lead		<92300	<92300	<92300	<92300	<92300	<92300	17000	300000
Manganese		<292000	<292000	<292000	<292000	<292000	<292000		
Mercury		21.7	44.3	31.9	53.6	74.4	20.9	120	3400
Nickel		9360	18200	16600	11300	13500	14500	18000	700000
Selenium		<92400	<92400	<92400	<92400	<92400	<92400	450	3900
Silver		<699	<699	<699	<699	<699	<699		
Thallium		<67600	<67600	<67600	<67600	<67600	<67600	8600	23000
Zinc		62000	290000	142000	88600	106000	69800	52000	2900000
MISCELLANEOUS (ug/kg)									

Oil and grease		580000	1070000	3110000	498000	328000	1010000		

(a) Mean/upper range of typical regional soil concentrations (USCS, 1984).

(b) NA = not analyzed for.

former battery acid pit at a depth of approximately 5 to 7 feet. Sample 5SS2 was taken from downgradient of the pit adjacent to the north wall of the building. The analytical results of this sample were considered useful for evaluating whether there had been contaminant migration from the pit. The two soil samples were analyzed for 13 metals. Both total and EP toxicity data were generated. Soil conductivity and pH were also measured.

5.3.4.2 Analytical Results and Data Evaluation. The chemical analysis results for samples collected at Site 5 are provided in Table 5-9. All analytes tested for are presented, regardless of whether detected. Since there are no applicable Federal or State standards/criteria for soil, chemical results were evaluated to identify exceedances of background and typical values reported for soils in the eastern United States and New Jersey.

Of the metals tested for, soil concentrations of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, and thallium were below detection. Metals detected included only nickel and zinc. Nickel concentrations were not significant in either sample. Zinc was detected at low concentration only in sample 5SS2. EP toxicity concentrations were all below USEPA criteria. pH and conductivity values were similar for the two samples and not indicative of site contamination.

Site 5 soils do not appear to be contaminated as a result of previous operations conducted at Site 5. Contaminant migration from the pit into surrounding soils does not appear to have occurred or has been flushed away due to the age of the site, its proximity to the North Channel, and tidal influence.

5.3.5 Site 6, PCB Spill Area

5.3.5.1 Investigative Program. Four soil samples were collected from Site 6 to evaluate whether previous PCB cleanup efforts were sufficient. Samples were analyzed for BNAs/PCBs.

5.3.5.2 Analytical Results and Data Evaluation. The chemical analysis results for samples collected at Site 6 are provided in Table 5-10. All PCBs tested for are reported, regardless of whether detected. Only BNAs detected in the sampled media are listed. A complete listing of analytical results is presented in Appendix C.

TABLE 5-9
Soil Sampling Analytical Results
Site 5, Battery Acid Pit
MOTBY, New Jersey

Analyte	Sample:	5SS1	5SS2	EP Toxicity Criteria (ug/l)

METALS - EP Extraction (ug/l)				

Antimony		NA	<84.6	
Arsenic		<0.0470	<0.0470	5000
Barium		4560	1.55	100000
Beryllium		<2.92	<2.92	
Cadmium		<4.09	<4.09	1000
Chromium		5.00	6.30	5000
Copper		<6.20	<6.20	
Iron		<55.1	<55.1	
Lead		2.69	4.09	5000
Manganese		12.4	24.9	
Mercury		<0.100	<0.100	200
Nickel		<16.2	<16.2	
Selenium		<98.6	<98.6	1000
Silver		<5.56	<5.56	5000
Thallium		<90.4	<90.4	
Zinc		38.4	60.9	
METALS - TOTAL (ug/g)				

Antimony		<7.60	<7.60	
Arsenic		<2.22	<2.22	
Barium		NA	NA	
Beryllium		<0.331	<0.331	
Cadmium		<0.951	<0.951	
Chromium		<9.31	<9.31	
Copper		<6.29	<6.29	
Iron		NA	NA	
Lead		<92.3	<92.3	
Manganese		NA	NA	
Mercury		<0.022	<0.0179	
Nickel		2.79	3.05	
Selenium		<1.95	<1.95	
Silver		<0.699	<0.699	
Thallium		<2.32	<2.32	
Zinc		<8.38	13.1	
MISCELLANEOUS				

pH (standard)		5.14	4.97	
Conductivity (umhos/cm)		57.9	85.6	

No PCBs were detected in any of the four soil samples tested. As shown in Table 5-9, four TCL BNAs were detected at concentrations ranging from 412 to 903 ug/kg. Only fluoranthene was detected in more than one sample. No applicable criteria exist for these constituents in soil. It is unknown whether they are related to the PCB spill at this site.

5.3.6 Site 7, Building 105 Drum Storage Area

5.3.6.1 Investigative Program. Five soil samples were collected at Site 7. Samples 7SS1A and 7SS2A were collected from the surface at the site. Samples 7SS1B, 7SS2B, and 7SS3 were collected at a depth of approximately 6 to 8 feet to evaluate vertical contaminant migration into the underlying soils and lateral migration from the site northward to the location of sample 7SS3. Two of the five samples were analyzed for TCL VOCs, BNAs/pesticides/PCBs, 13 metals, EP toxicity, and oil and grease. The other three samples were analyzed only for VOCs and oil and grease.

5.3.6.2 Analytical Results and Data Evaluation. The chemical results for samples collected at Site 7 are provided in Table 5-11. For VOCs and BNAs, only analytes detected in the sampled media are presented. All results are shown for other analytes, regardless of whether detected. Since there are no applicable Federal or State, standards/criteria for soil, chemical results were evaluated to identify exceedances of background and typical values reported for soils in the eastern United States and New Jersey. A complete listing of analytical results is provided in Appendix C.

Tetrachloroethylene, detected in sample 7SS1B at a concentration of 8.6 ug/kg, was the only VOC detected in any of the soil samples.

Ten BNAs were detected in sample 7SS1B, as shown in Table 5-11. Six of these BNAs were also detected in sample 7SS1A, taken at the same location at a shallower depth. With the exception of phenol, concentrations of BNAs are lower in sample 7SS1A, indicating an increase in concentration with depth. Results are indicative of vertical migration through the underlying soils. The concentration of phenol in sample 7SS1B was below detection.

Of the 13 metals tested for, only copper, mercury, nickel, and zinc were detected in Site 7 soils. Concentrations of these constituents appear to represent natural conditions. EP toxicity concentrations were below USEPA criteria.

TABLE 5-10
Soil Sampling Analytical Results
Site 6, PCB Spill Area
MOTBY, New Jersey

Analyte	Sample:	6SS1	6SS2	6SS3	6SS4
BNA EXTRACTABLES (ug/kg)					
PCB 016		<5000	<5000	<5000	<5000
PCB 221		<5000	<5000	<5000	<5000
PCB 222		<5000	<5000	<5000	<5000
PCB 223		<5000	<5000	<5000	<5000
PCB 224		<5000	<5000	<5000	<5000
PCB 225		<5000	<5000	<5000	<5000
PCB 226		<5000	<5000	<5000	<5000
PCB 227		<5000	<5000	<5000	<5000
PCB 228		<5000	<5000	<5000	<5000
PCB 229		<5000	<5000	<5000	<5000
PCB 230		<5000	<5000	<5000	<5000
PCB 231		<5000	<5000	<5000	<5000
PCB 232		<5000	<5000	<5000	<5000
PCB 233		<5000	<5000	<5000	<5000
PCB 234		<5000	<5000	<5000	<5000
PCB 235		<5000	<5000	<5000	<5000
PCB 236		<5000	<5000	<5000	<5000
PCB 237		<5000	<5000	<5000	<5000
PCB 238		<5000	<5000	<5000	<5000
PCB 239		<5000	<5000	<5000	<5000
PCB 240		<5000	<5000	<5000	<5000
PCB 241		<5000	<5000	<5000	<5000
PCB 242		<5000	<5000	<5000	<5000
PCB 243		<5000	<5000	<5000	<5000
PCB 244		<5000	<5000	<5000	<5000
PCB 245		<5000	<5000	<5000	<5000
PCB 246		<5000	<5000	<5000	<5000
PCB 247		<5000	<5000	<5000	<5000
PCB 248		<5000	<5000	<5000	<5000
PCB 249		<5000	<5000	<5000	<5000
PCB 250		<5000	<5000	<5000	<5000
PCB 251		<5000	<5000	<5000	<5000
PCB 252		<5000	<5000	<5000	<5000
PCB 253		<5000	<5000	<5000	<5000
PCB 254		<5000	<5000	<5000	<5000
PCB 255		<5000	<5000	<5000	<5000
PCB 256		<5000	<5000	<5000	<5000
PCB 257		<5000	<5000	<5000	<5000
PCB 258		<5000	<5000	<5000	<5000
PCB 259		<5000	<5000	<5000	<5000
PCB 260		<5000	<5000	<5000	<5000
Dibenzofuran		<5000	<5000	<5000	<5000
Fluoranthene		<5000	<5000	<5000	<5000
Hexachlorobenzene		<5000	<5000	<5000	<5000
Pyrene		<5000	<5000	<5000	<5000

TABLE 5-11
Soil Sampling Analytical Results
Site 7, Building 105 Drum Storage Area
MOTBY, New Jersey

Analyte	Sample:	7SS1A	7SS1B	7SS2A	7SS2B	7SS3	EP Toxicity Criteria (ug/l)
VOLATILE ORGANICS (ug/kg)							
Tetrachloroethylene		<7.9	8.6	<7.9	<7.9	<7.9	
BNA EXTRACTABLES (ug/kg)							
Benzo(a)anthracene		1230	23800	NA	NA	NA	
Benzo(a)pyrene		1150	21400	NA	NA	NA	
Benzo(b)fluoranthene		1110	23300	NA	NA	NA	
Chrysene		1330	24300	NA	NA	NA	
Dibenzofuran		<330	5550	NA	NA	NA	
Fluoranthene		1360	55800	NA	NA	NA	
Fluorene		<330	7950	NA	NA	NA	
Indeno(1,2,3-c,d)pyrene		<450	12100	NA	NA	NA	
Phenol		808	<330	NA	NA	NA	
Pyrene		1290	22700	NA	NA	NA	
2-Methyl naphthalene		<330	3040	NA	NA	NA	
METALS - EP Toxicity (ug/l)							
Antimony		<373	<373	NA	NA	NA	
Arsenic		<0.0470	<0.0470	NA	NA	NA	5000
Barium		27.1	35.2	NA	NA	NA	100000
Beryllium		<2.02	<2.02	NA	NA	NA	
Cadmium		<4.09	<4.09	NA	NA	NA	1000
Chromium		<4.44	5.20	NA	NA	NA	5000
Copper		16.9	11.2	NA	NA	NA	
Iron		<55.1	<55.1	NA	NA	NA	
Lead		3.64	3.65	NA	NA	NA	5000
Manganese		208	80.5	NA	NA	NA	
Mercury		<0.100	<0.100	NA	NA	NA	200
Nickel		<16.2	<16.2	NA	NA	NA	
Selenium		<98.6	<98.6	NA	NA	NA	1000
Silver		<5.56	<5.56	NA	NA	NA	5000
Thallium		<90.4	<90.4	NA	NA	NA	
Zinc		106	54.7	NA	NA	NA	
METALS - TOTAL (ug/g)							
Antimony		<7.60	<7.60				
Arsenic		<2.22	<2.22				
Barium		NA	NA				
Beryllium		<0.331	<0.331				
Cadmium		<0.951	<0.951				
Chromium		<9.31	<9.31				
Copper		35.2	16.3				
Iron		NA	NA				
Lead		<92.3	<92.3				
Manganese		NA	NA				
Mercury		0.063	0.04				
Nickel		<1.64	<1.64				
Selenium		<1.65	<1.65				
Silver		<0.699	<0.699				
Thallium		<2.32	<2.32				
Zinc		40.5	15.2				
MISCELLANEOUS (ug/kg)							
Oil and grease		<5000000	<5000000	<5000000	<5000000	<5000000	

Oil and grease concentrations were below detection in all Site 7 samples.

5.3.6.3 Migration Potential. Subsurface conditions indicate that site groundwater is affected by tidal action, and that there is mixing with waters of the Upper New York Bay. The tidal action would disperse any contaminants detected radially from the site, with little possibility of direct discharge into the bay in any single definite direction. Twelve organic compounds were detected in site soils; the concentration of only one compound was greatest just below the surface, and 11 compounds had higher concentrations just above the water table. This should indicate that there is no significant difference in contaminant occurrence throughout the soil column, but five of the compounds detected at depth were not detected near the surface. Contaminants appear to be accumulating at the water table, supporting the assumption that groundwater will not flow from the site in an identifiable direction.

5.3.7 Site 8, Fire Training Area

5.3.7.1 Investigative Program. Five soil samples were collected at Site 8 as part of the MOTBY RI. Samples 8SS1, 8SS2, 8SS3, and 8SS4 were near-surface samples collected from areas thought to be former locations of firefighting training structures. Sample 8SS5 was taken at a depth of 5 to 7 feet at the same location as 8SS2 to evaluate the vertical extent of any contaminant migration. Samples were analyzed for TCL VOCs, BNAs, 16 metals, and oil and grease.

5.3.7.2 Analytical Results and Data Evaluation. The chemical analysis results for samples collected at Site 8 are provided in Table 5-12. For VOCs and BNAs, only analytes detected in the sampled media are presented. All results are presented for other analytes, regardless of whether detected. Since there are no applicable Federal or State standards/criteria for the constituents detected in soil, chemical results were evaluated to identify exceedances of background and typical values reported for soils in the eastern United States and New Jersey. A complete listing of analytical results is provided in Appendix C.

No TCL VOCs were detected in any of the Site 8 soil samples.

Fifteen BNAs were detected in the soil samples, as shown in Table 5-12. The largest number of BNAs (10) was detected in sample 8SS4; however, the highest BNA concentrations were detected in sample 8SS1. Heptadecane and hexadecane were detected at concentrations of 15,800 and 17,400 ug/kg, respectively. Two

TABLE 5-12
Soil Sampling Analytical Results
Site 8, Fire Training Area
MOTBY, New Jersey

		Typical Soil Concentration Range(a) (ug/kg)						
Analyte	Sample:	8SS1	8SS2	8SS3	8SS4	8SS5	Mean	Upper Range

BNA EXTRACTABLES (ug/kg)								

Acenaphthene		<340	<340	<340	335	<340		
Anthracene		<290	<290	<290	556	<290		
Benzo(a)anthracene		<270	<270	<270	800	<270		
Benzo(a)pyrene		<160	<160	321	735	<160		
Benzo(b)fluoranthene		<250	<250	<250	536	<250		
Chrysene		<190	<190	503	858	<190		
Diethyl phthalate		<330	364	<330	1560	509		
Dodecane		902	NA	NA	NA	NA		
Fluoranthene		328	<210	799	1840	<210		
Heptadecane		15800	NA	NA	NA	NA		
Hexadecane		17400	NA	NA	NA	NA		
Naphthalene		<280	<280	353	<280	<280		
Pyrene		<530	<530	515	1270	<530		
Tridecane		1210	NA	NA	NA	NA		
2-methyl naphthalene		<330	732	6710	1730	1200		
METALS - TOTAL (ug/kg)								

Antimony		<373	<373	<373	<373	<373	760	8800
Arsenic		20400	490000	300000	30600	79000	7400	10000
Barium		32700	80000	140000	33600	210000	420000	1500000
Beryllium		<331	799	1290	417	1640	850	7000
Cadmium		<951	<951	<951	<951	<951		
Chromium		<9310	<9310	<9310	<9310	<9310	52000	1000000
Copper		22900	150000	92000	29400	34300		
Iron		4300000	8000000	19000000	5000000	15000000	22000	700000
Lead		<92300	<92300	104000	<92300	<92300	17000	300000
Manganese		<292000	<292000	<292000	<292000	<292000		
Mercury		23.7	510	530	253	96	120	3400
Nickel		6090	20000	32300	11500	19100	18000	700000
Selenium		<92400	<92400	<92400	<92400	<92400	450	3900
Silver		<699	<699	<699	<699	<699		
Thallium		<67600	<67600	<67600	<67600	<67600	8600	23000
Zinc		420000	106000	119000	53300	55300	52000	2900000
MISCELLANEOUS (ug/kg)								

Oil and grease		3040000	398000	171000	216000	48500		

BNAs--diethyl phthalate and 2-methyl naphthalene--were detected in Sample 8SS2. Both of these constituents were detected in sample 8SS5, collected at the same location as 8SS2 at a depth of 5 to 7 feet. Concentrations were higher in the deeper sample, but similar in magnitude.

Of the 16 metals tested for, antimony, cadmium, chromium, manganese, selenium, silver, and thallium were not detected in any of the Site 8 soil samples. With the exception of arsenic and iron, other metals concentrations are similar to background or within the range of concentrations typical for soils of the eastern United States and New Jersey. Arsenic concentrations in 8SS2 and 8SS3 were an order of magnitude higher than soil samples collected elsewhere at MOTBY.

Oil and grease concentrations in Site 8 samples ranged from 48.5 to 3,040 ug/g.

5.3.7.3 Migration Potential. Site 8 is approximately 12 feet above mean sea level and located less than 100 feet from a tidally affected shoreline, indicating that any contaminants detected in the soil will be dispersed by a fluctuating tidally influenced water table if they migrate vertically to the water table. The subsurface at this site consists of hydraulic sand fill, material that would allow infiltration of contaminants found in the soil.

5.3.8 Other Areas of Potential Concern

One soil sample (9SS1) was collected from the surface near Building 103, where a 55-gallon drum had been located, to evaluate whether spillage or leakage had occurred. The sample was analyzed for VOCs. Chemical results for sample 9SS1 showed that all VOCs tested for were below detection.

5.4 WATER/SEDIMENT QUALITY OF UPPER NEW YORK BAY

To evaluate the potential impact of surface water and groundwater from Site 1 and Site 2 at MOTBY on the North Channel and Upper New York Bay, historical results from samples collected from these water bodies were reviewed. Data were evaluated from USGS Water Resources Bulletins for eastern New York State (USGS, 1987), the New York City Department of Environmental Protection (NYDEP), and the EPA STORET data management program. The 1987 New York Harbor Water Quality Survey (Draft) was provided by NYDEP. From the available data, three sampling locations in New York Harbor were identified within 1 mile of

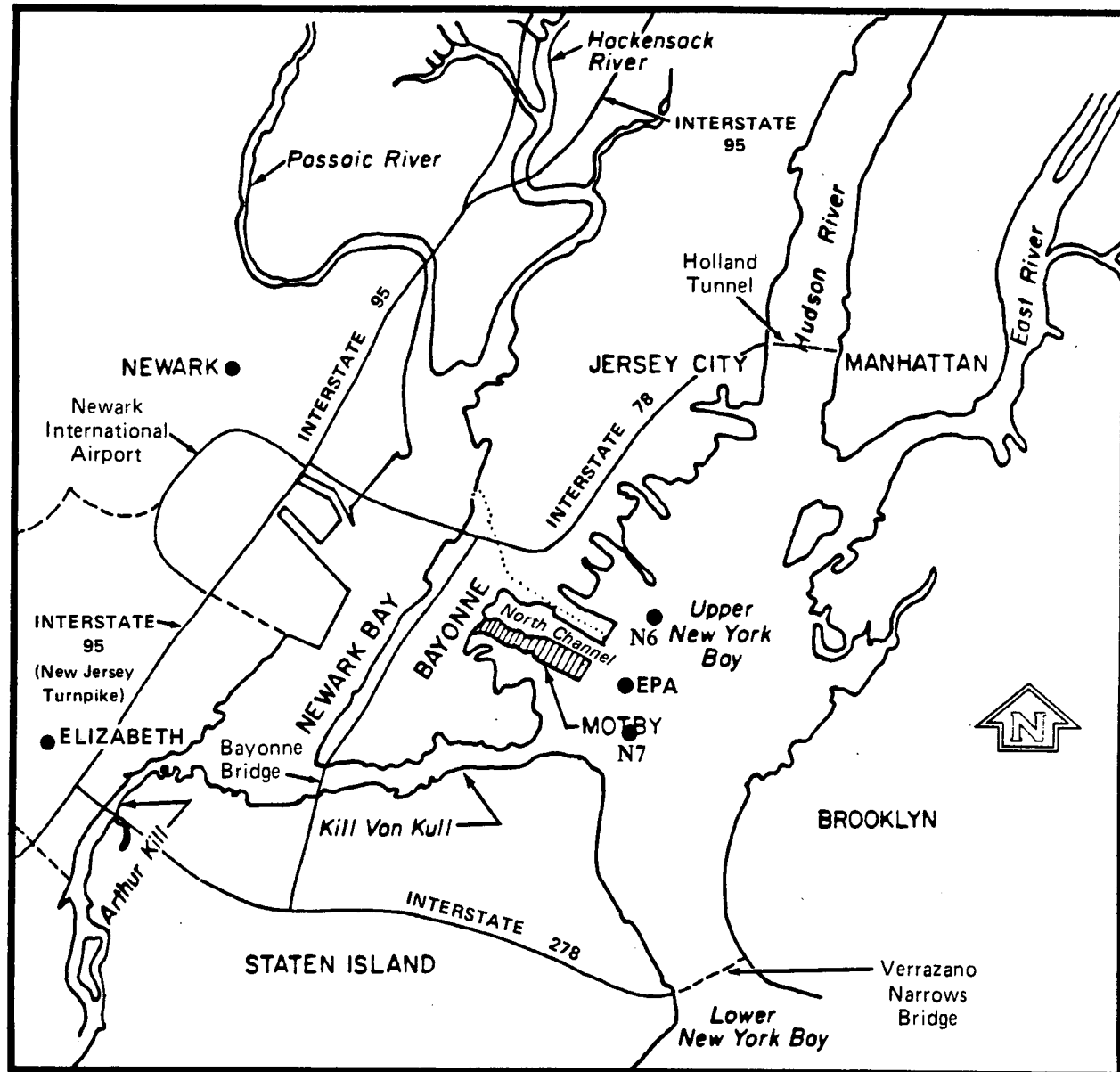
MOTBY, as shown in Figure 5-1. No sampling stations were identified in the North Channel. The majority of water quality data pertinent to evaluation of MOTBY analytical results was for analyses for metals. The Upper New York Bay data collected from the various sources are summarized in Table 5-13. Other relevant constituents that were analyzed for but not detected at these stations are listed in Table 5-14 along with their detection limits.

5.4.1 Comparison of Groundwater Analytical Results

Water table maps (Figure 3-11 and 3-12) indicate that shallow groundwater flows to the north/northeast from Sites 1 and 2, eventually discharging into the North Channel. This groundwater flow regime indicates that the quality of groundwater beneath Sites 1 and 2 could have a positive or adverse impact on water quality in the North Channel and New York Harbor, however minimal, given the rather significant dilution factor. To evaluate this effect, the groundwater quality data for samples collected from wells installed at Sites 1 and 2 were compared to the surface water quality data available for New York Harbor.

As discussed in Section 5.3.1.2, the few VOCs detected in groundwater samples from wells installed at the sites are interpreted as not being associated with releases from Sites 1 or 2. Since these VOCs do not appear to be representative of site conditions, Sites 1 and 2 do not appear to be adversely affecting the quality of water in the harbor via VOC migration through groundwater. No relevant VOC data were available for the three stations in the harbor.

The BNAs/pesticides/PCBs detected in the groundwater at Sites 1 and 2 were considered to be either unrelated to the two sites, unrepresentative of site conditions since they were detected in upgradient rather than downgradient wells, or related to the fill materials with which MOTBY was constructed. The BNAs/pesticides/PCBs detected in the groundwater samples were not analyzed for in the harbor surface water samples collected. The two BNAs detected in the harbor (31 ug/l of 1,4-dichlorobenzene and 0.03 ug/l of 1,2,4-trichlorobenzene) indicate that the harbor contains compounds that are not derived from Sites 1 or 2, since these BNAs were not detected in the groundwater samples. Similarly, the pesticides alpha-BHC (0.0066 ug/l) and delta-BHC (0.0146 ug/l) detected in the harbor samples were not detected in the groundwater at Sites 1 or 2, indicating that the source of these compounds is not from the sites.



SOURCE: USATHAMA, 1980

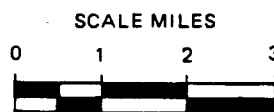


FIGURE 5-1
SAMPLING STATIONS NEAR MOTBY
WITHIN THE UPPER NEW YORK BAY

TABLE 5-13

HISTORICAL ANALYTICAL RESULTS OF SAMPLES COLLECTED FROM
THE UPPER NEW YORK BAY

PARAMETER	SAMPLING				LOCATIONS				EPA SAMPLING STATION (c)		
	N6				N7						
	Surface Water (ug/l)			Sediment (ug/kg)	Surface Water (ug/l)			Sediment (ug/kg)	Surface Water (ug/l)		
	1985	1987	Average (a)	Average (a)	1986	1987	Average (a)	Average (a)	Minimum	Maximum	Average
CHLORINATED HYDROCARBONS											
1,4-Dichlorobenzene	31	ND	-- (b)	--	<0.19	--	--	--	--	--	--
1,2,4-Trichlorobenzene	<0.13	ND	--	--	0.038	--	--	--	--	--	--
PCBs/ PESTICIDES											
Alpha BHC	<0.00048	0.0066	--	--	<0.00036	--	--	--	--	--	--
Delta BHC	--	0.0146	--	--	--	--	--	--	--	--	--
OIL AND GREASE	--	--	--	--	--	--	--	--	0 (mg/l)	14495 (mg/l)	2478 (mg/l)
METALS (ug/l)											
Arsenic	--	2.50	--	--	--	0.20	--	--	--	--	--
Cadmium	--	2.20	1.8	2400	--	13.00	5.4	1230	--	--	--
Chromium (total)	--	18.00	8.9	74250	--	17.00	8.9	36500	0	46	14
Copper	--	15.00	48.2	57800	--	5.40	52.0	27300	0	261	79
Lead	--	210.00	95.8	79500	--	140.00	66.7	35800	0	1330	348
Mercury	--	0.10	0.3	2240	--	0.10	0.3	311	--	--	--
Nickel	--	32.00	21.1	19700	--	11.00	14.5	10900	--	--	--
Silver	--	0.07	--	--	--	0.33	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	0	670	214
Zinc	--	89.00	49.7	173000	--	84.00	48.2	112000	0	1180	341

(a) Average values for samples collected from 1985-1987. Data from NYDEC, 1987.

(b) No data available.

(c) Data from intensive 1 day sampling survey in June, 1983. Averages calculated from the 6 samples collected during the study. Data retrieved from the EPA STORET Data system.

TABLE 5-14

ANALYTICAL DETECTION LIMITS FOR CHLORINATED HYDROCARBONS,
PESTICIDES, AND PCBs IN SURFACE WATER SAMPLES COLLECTED FROM
THE UPPER NEW YORK BAY

	1985	1986
	-----	-----
PCBs	0.002	0.02
PESTICIDES		
Alpha BHC	0.00048	0.00036
Gamma BHC	0.00048	0.00045
Beta BHC	0.0008	0.0047
Heptachlor	0.00068	0.000385
Hept-Epoxyde	0.0016	0.000835
Aldrin	0.001	0.000655
P,P' DDE	0.002	0.000805
Dieldrin	0.0024	0.000775
O,P' DDT	0.0036	0.0015
P,P' DDD	0.003	0.00124
P,P' DDT	0.004	0.00155
Mirex	0.008	0.0064
Methoxychlor	0.02	0.02
Chlordane	0.027	0.027
Toxaphene	0.2	0.2
Alpha Endosulfan	0.004	0.004
Beta Endosulfan	0.008	0.008
Endosulfan	0.008	0.008
POLYCHLORINATED HYDROCARBONS		
1,3 Dichlorobenzene	0.048	0.08
1,4 Dichlorobenzene	0.042	0.19
Hexachlorobenzene	0.05	0.0026
1,2 Dichlorobenzene	0.06	0.1
Hexachloroethane	0.064	0.0016
Trichlorobenzene	0.13	0.017
2-Chloronaphthalene	0.012	0.17
Hexachlorocyclopentadiene	0.024	0.032

Six samples were collected from sampling station USEPA (USEPA STORET ID L7064838363) during an intensive 1-day study and analyzed for oil and grease. The concentrations ranged from below detection to 14,495 mg/l, with an average concentration of 2,478 mg/l. The maximum concentration of oil and grease detected in the groundwater was 20.1 mg/l in well DM-2. This value is significantly lower than the average value detected in the harbor and may indicate that if oil and grease were to migrate through the groundwater at detected concentrations, it would not adversely affect the conditions of the harbor. However, it should be noted that the samples collected in the harbor were collected in 1983 during a 1-day sampling effort and may not represent current conditions.

Chemical data were evaluated to compare metals concentrations in the Upper New York Bay to metals concentrations in groundwater at Sites 1 and 2. Data were unavailable for concentrations of antimony, barium, beryllium, nickel, selenium, or thallium in the bay. With the exception of lead detected in well DM-4C, concentrations of cadmium, lead, and silver in MOTBY groundwater were below the detection limits or below the average concentrations detected at stations N6, N7, and the USEPA sampling station. This indicates that metals concentrations are not degrading the water quality of the harbor via groundwater migration from the sites. Well DM-4C is located upgradient of the landfill and was installed above a sunken barge.

The concentrations of chromium, copper, mercury, and zinc were found to exceed the average concentrations reported in the harbor in at least one monitoring well; however, only chromium, copper, and zinc concentrations in well DM-4C exceed MCLs. Arsenic was detected at concentrations greater than those detected at locations N6 and N7 in all wells except DM-7 and DM-8 during a one-time sampling event in 1989. Since these five metals are not considered to be related to Site 1 or 2 releases (Section 5.3.1.2), the harbor water quality does not appear to be adversely impacted by metals whose source is located within these sites. However, since the concentrations sometimes exceed the average concentrations detected in the harbor, the groundwater beneath MOTBY may be of a poorer quality than the harbor with respect to these metals.

Based on a review of available data, it appears that--with the exception of the above-mentioned metals--the groundwater quality beneath Sites 1 and 2 is generally better than that in the New York Harbor.

5.4.2 Comparison of Surface Water Analytical Results

As discussed in Section 5.3.1.2, VOCs detected in the surface water samples collected at MOTBY appear to be related to laboratory artifacts or attributable to offsite sources independent of either Site 1 or Site 2. The BNAs/pesticides/PCBs detected in the surface water samples at MOTBY were not analyzed for in the surface water samples collected from the New York Harbor. The detection of BNAs (1,4-dichlorobenzene and 1,2,4-trichlorobenzene) and pesticides (alpha-BHC and delta-BHC) in the harbor, but not in the surface water samples at MOTBY, indicates that the source of these compounds is not from Site 1 or Site 2, and that the water quality of the harbor is poorer than that at MOTBY with respect to these compounds.

The average concentration of oil and grease detected at the EPA sampling station (2,478 mg/l) was not exceeded by any of the surface water samples analyzed from Sites 1 or 2. The highest detected concentration--48.9 mg/l from sample 1SW3 (Dup)--indicates that the surface water runoff concentration from MOTBY is lower than the observed concentration of oil and grease in the harbor.

The concentrations for four metals (chromium, cadmium, lead, and silver) were either not detected in the surface water samples at MOTBY or were detected at concentrations less than the average concentrations detected at sampling stations N6, N7, or the USEPA station. Copper and mercury were only detected at one sampling station (1SW3) at concentrations higher than averages reported for the harbor sampling stations. At the other sampling locations, copper was detected in three of the four samples collected, and mercury was detected only in the 1SW3 duplicate and at a concentration less than the harbor averages.

The concentration of zinc detected in three of the four surface water samples at MOTBY exceeded the average concentrations at harbor sampling locations N6 (49.7 ug/l) and N7 (48.2 ug/l), but not at the USEPA sampling location (341 ug/l).

Although the concentrations of some metals exceed the average concentrations detected in the harbor, it appears that the surface water quality at MOTBY is generally better than that of the New York Harbor and that even without the significant dilution occurring, surface water drainage from MOTBY into the harbor should not have an adverse impact on surface water quality in the harbor.

5.4.3 Comparison of Sediment Analytical Results

The concentrations of metals in the sediment samples taken from Sites 1 and 2 were compared to the average metals concentrations detected at sampling stations N6 and N7 in New York Harbor. No data were available to compare other parameters such as VOCs or BNAs.

The sediment concentrations of cadmium and mercury from Sites 1 and 2 did not exceed the average concentrations at locations N6 and N7. Only one sample (ISE4) detected chromium at a concentration above the average concentrations of N7 (36,500 ug/kg) and N6 (74,250 ug/kg). Copper was found to exceed the average concentration of N6 (57,800 ug/kg) at locations ISE1 and ISE4. Sample ISE1 was collected from a water body not influenced by any of the identified sites of concern, suggesting natural occurrence. Nickel exceeded the average concentration of N7 (10,900 ug/kg) in samples ISE3 (17,800 ug/kg) and ISE4 (31,100 ug/kg). The concentrations of lead detected in the Site 1 and 2 samples exceeded the average concentrations of both N6 (79,500 ug/kg) and N7 (10,900 ug/kg) in samples ISE1 (220,000 ug/kg) and ISE4 (171,000 ug/kg). The concentration of lead was below the detection limit in the other two samples (ISE2 and ISE3), though the detection limit (92,300 ug/kg) is greater than both average concentrations.

5.4.4 Summary

A comparison of the quality of MOTBY groundwater, surface water, and sediment potentially entering the North Channel and Upper New York Bay with the quality of the receiving body indicates that--in general--the quality of MOTBY media potentially migrating into the North Channel is better than that of the channel itself. For the few constituents where concentrations in MOTBY media exceed concentrations observed in the Upper New York Bay, the detected concentrations will not likely alter the quality of the bay due to the small volume entering from MOTBY. In addition, the majority of the constituent exceedances of average bay concentrations appear to be unrelated to specific site sources and are more likely representative of the general conditions at MOTBY due to its manmade character.

6.0 EVALUATION OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The objectives of this public health and environmental assessment are to evaluate the potential human health risks associated with the presence and migration of chemical contaminants at the study sites, as well as the potential for adverse environmental impacts from site contamination. The chemical contaminants of concern in this evaluation have been selected in accordance with USEPA (1986a) recommendations from the list of detected analytes provided in Tables 5-2 through 5-12. Exposure and risk were evaluated at Sites 1, 2, and 7, but human exposure pathways did not appear to be present at the other sites. The carcinogenic risk and noncarcinogenic toxic hazard associated with contaminants of concern are characterized in Section 6.3. The environmental impacts potentially associated with the contaminants of concern are discussed in Section 6.4.

6.1 SELECTION OF CONTAMINANTS OF CONCERN

The selection of contaminants for evaluation of exposure and risk associated with the study sites at MOTBY is based on:

- Representativeness.
- Exceedance of environmental standards/criteria.
- Availability of USEPA weight-of-evidence classifications regarding carcinogenicity or USEPA acceptable intakes for noncarcinogenic effects.

These selection criteria are in accordance with recommended procedures in the Superfund Public Health Evaluation Manual (USEPA, 1986a). As a first selection step, representativeness requires that detection of an analyte is likely attributable to a site and not to laboratory contamination or to offsite sources not being studied in the RI. As a second step, detected analytes are selected if standards/criteria are exceeded or are unavailable. Applicable environmental standards/criteria for the selection process are provided in Table 5-1. In the third step, USEPA weight-of-evidence classification for the selection process is obtained from USEPA's Integrated Risk Information System (IRIS) as a primary reference and PHRED (USEPA Superfund Public Health Evaluation Database) as a secondary reference. Detected analytes that are not selected due to lack of information on health effects are, however, included in the discussion of environmental impacts in Section 6.4.

6.1.1 Site 1, Landfill, and Site 2, Former Naval Storage Area

The selected contaminants of concern for all media at Sites 1 and 2 are summarized in Table 6-1. Those selected for groundwater are phenanthrene (DM-9), lead (DM-5), and manganese (DM-5, DM-6, DM-8, DM-9 and DM-10). Groundwater at wells DM-1, DM-3, DM-4C, DM-12, and DM-13 is not impacted by Sites 1 and 2, while wells DM-2, DM-7, and DM-11 were installed below the confining unit of the water table aquifer. Relevant human health effects information from EPA is not available for other detected BNAs listed on Table 5-2 or for the detected iron. The few VOCs detected in groundwater at Site 1 are not considered representative of the shallow groundwater aquifer as impacted by Site 1.

For surface water, the metals that exceeded Federal or State criteria--and for which health effects information is available--are arsenic, copper, lead, mercury, and zinc. In addition, iron, manganese, and barium exceeded Federal and State MCLs, but available human health effects information on aquatic iron is not relevant to the calculation of acceptable intake (or potency factors). Moreover, overload of inorganic iron in the human body can only result from an abnormal physiological condition (Jacobs and Worwood, 1980). VOCs were not detected, and health effects information for the detected BNAs is unavailable.

With the exception of arsenic (ISE4), concentrations of metals detected in site sediments were within the range of typical soil background concentrations. Chlorobenzene (ISE3) is also selected as a contaminant of concern in sediment, as well as benzo(a)pyrene, benzo(b)fluoranthene, chrysene, di-n-butyl phthalate, and phenanthrene. Other BNAs detected in site sediment have not been classified with regard to health effects, though their environmental impact is discussed in Section 6.4.

The surface soil at Site 2 does not appear to contain VOCs. Detected BNAs include benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)-pyrene. Other BNAs detected in the soil lack classification regarding health effects. Of the detected metals, antimony, arsenic, copper, iron, lead, and zinc exceed the range of metal concentrations in typical soils of the eastern United States (Table 5-1). With the exception of iron (which is without relevant health effects information), all metals in exceedance of typical concentrations are selected. Cadmium is also selected because its typical soil concentrations have not been reported.

TABLE 6-1
Summary Selection of Contaminants of Concern
Sites 1 and 2
MOTBY, New Jersey

<u>Constituent</u>	<u>Environmental Medium</u>	<u>Concentration Range</u>	<u>Units</u>	<u>Location of Maximum Detected Concentration</u>	<u>USEPA Weight of Evidence (a)</u>	<u>Exceedance of Standards/ Criteria (b)</u>
<u>VOCs</u>						
Chlorobenzene	sed	5.0	ug/kg	1SE3	NA	NC
<u>BNAs</u>						
Benzo(a)pyrene	sed	1,360-6,710	ug/kg	1SE3	B2	NC
	soil	370-9,320	ug/kg	2SS4		NC
Benzo(b) fluoranthene	sed	791-5,980	ug/kg	1SE3	B2	NC
	soil	2,140-8,180	ug/kg	2SS4		NC
Chrysene	sed	2,340-8,250	ug/kg	1SE3	B2	NC
	soil	2,980-8,020	ug/kg	2SS4		NC
Di-n-butyl phthalate	sed	479	ug/kg	1SE4	D	NC
Indeno(1,2,3-cd) pyrene	soil	1,210-4,010	ug/kg	2SS4	C	NC
Phenanthrene	gw	20.4	ug/l	DM-9	D	NC
	sed	3,140	ug/kg	1SE4		NC
<u>Metals</u>						
Antimony	soil	24,000	ug/kg	2SS3	NA	Typical soil
Arsenic	sw	5.97-19.9	ug/l	1SW2	A	FAWQC
	sed	13,400-41,000	ug/kg	1SE4		Typical soil
	soil	6,000-85,000	ug/kg	2SS2		Typical soil
Barium	sw	15.9-981	ug/l	1SW3	NA	NC
Cadmium	soil	1,510-5,950	ug/kg	2SS4	B1	NC
Copper	sw	22.8-128	ug/l	1SW3	D	FAWQC
	soil	40,700-1,100,000	ug/kg	2SS5		Typical soil
Lead	gw	79.0	ug/l	DM-5	B2	FAWQC Typical soil
	sw	2.4-130	ug/l	1SW3		
	soil	560,000	ug/kg	2SS3		

TABLE 6-1 (cont'd)

<u>Constituent</u>	<u>Environmental Medium</u>	<u>Concentration Range</u>	<u>Units</u>	<u>Location of Maximum Detected Concentration</u>	<u>USEPA Weight of Evidence(a)</u>	<u>Exceedance of Standards/ Criteria(b)</u>
Manganese	gw	217-1,100	ug/l	DM-8	D	SMCL
	SW	64.2-1,330	ug/l	1SW2		MCL
Mercury	SW	0.220-0.760	ug/l	1SW3	D	FAWQC
Zinc	SW	115-432	ug/l	1SW3	NA	SWS
	soil	5,300,000	ug/kg	2SS5		Typical soil

(a) USEPA Weight-of-evidence:

A = Human Carcinogen—Sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer.

B2 = Probable Human Carcinogen—Sufficient evidence of carcinogenicity in animals, inadequate evidence in humans.

C = Possible Human Carcinogen—Limited evidence of carcinogenicity in animals.

D = Not Classified—Inadequate evidence of carcinogenicity in animals.

NA = EPA classification is not available.

(b) Exceedance of standards/criteria:

NC = No criteria available.

FAWQC = Federal ambient water quality criteria (chronic marine).

Typical soil = Exceeds range of typical regional soil concentration (USGS, 1984).

SMCL = Secondary Maximum Contaminant Level.

MCL = Maximum Contaminant Level.

SWS = New Jersey salt water standards.

6.1.2 Site 3, Underground Storage Tanks, and Site 5, Battery Acid Pit

No contaminants of concern have been selected for Sites 3 or 5. At Site 3, environmental media were not sampled for this RI. Sampling at Site 3 was conducted to determine storage tank contents. At Site 5, soil samples were analyzed for metals. Of those that were detected, none were in exceedance of typical soil concentrations for the eastern United States and New Jersey.

6.1.3 Site 4, DRMO Drum Storage Area

No contaminants of concern have been selected for Site 4. Of the six soil samples analyzed in this area, three were taken from beneath an asphalt covering, and three were taken from the pathway expected for surface runoff from the asphalt. The methylene chloride and acetone detected in two samples from beneath the asphalt are likely laboratory artifacts. Although dibenzofuran and 2-methylnaphthalene were detected along the path of surface runoff, health effects information--from which potency factors or acceptable intakes could be generated--is not available for their evaluation. 2-Methylnaphthalene may have leached from the asphalt covering, but there is no indication that dibenzofuran originated at Site 4. The possible environmental impact of these two BNAs is discussed in Section 6.4. None of the detected metals except arsenic are present at concentrations higher than typical for soils in the eastern United States and New Jersey. The potential effects of arsenic in soil at this site would not be significant since the site soils are covered by asphalt or gravel. Possible effects of arsenic in soils are discussed in detail for Sites 1 and 2 since these areas are more likely to pose potential risks as a result of no cover material being present.

6.1.4 Site 6, PCB Spill Area

Hexachlorobenzene (6SS4) was selected as a contaminant of concern in soil. Although dibenzofuran, fluoranthene, and pyrene were also detected, public health effects information, sufficient for their evaluation, are unavailable. No PCBs were detected in soil samples from this site. The potential environmental impact of detected analytes is addressed in Section 6.4.

6.1.5 Site 7, Building 105 Drum Storage Area

Four contaminants of concern were selected from the analytes detected in a near-surface soil sample (7SS1A). Those selected include benzo(a)pyrene, benzo(b)-

TABLE 6-2

Summary Selection of Contaminants of Concern
 Site 7
 MOTBY, New Jersey

<u>Constituent</u>	<u>Environmental Medium</u>	<u>Concentration Range</u>	<u>Units</u>	<u>Location of Maximum Detected Concentration</u>	<u>USEPA Weight of Evidence(a)</u>	<u>Exceedance of Standards Criteria(b)</u>
Benzo(a)pyrene	soil	1,150	ug/kg	7SS1A	B2	NC
Benzo(b)fluoranthene	soil	1,110	ug/kg	7SS1A	B2	NC
Chrysene	soil	1,330	ug/kg	7SS1A	B2	NC
Phenol	soil	808	ug/kg	7SS1A	NA	NC
Tetrachloroethylene	soil	8.6	ug/kg	7SS1B	B2	NC

(a) See Table 6-1 footnotes.

(b) See Table 6-1 footnotes.

fluoranthene, chrysene, and phenol (Table 6-2). Three additional BNAs were detected, but health effects information is lacking for them. The detected metals--copper, nickel, and zinc--were present at levels well within the typical range for soils of the eastern United States and New Jersey. At a depth of approximately 6 to 8 feet (7SS1B), several BNAs and a low concentration level of tetrachloroethylene were detected as well. The latter compound was also selected as a contaminant of concern. The potential environmental impacts of this site are discussed in Section 6.4.

6.1.6 Site 8, Fire Training Area

At Site 8, several BNAs--including polycyclic aromatic hydrocarbons, diethyl phthalate, and 2-methylnaphthalene--were detected in near-surface soil samples. Slightly higher but comparable concentrations of the latter two BNAs were also detected in a sample collected at a depth of 5 to 7 feet, suggesting that these two chemicals could be characteristic of the MOTBY fill material rather than of former activities at the site. Benzo(a) pyrene, benzo(b) fluoranthene, and chrysene have been classified with regard to health effects and are thus selected as contaminants of concern (Table 6-3).

The environmental impact of all detected BNAs is addressed in Section 6.4. Of the detected metals, only arsenic and iron exceed typical soil concentrations for the eastern United States and New Jersey. Because health effects classification for iron is lacking, it is not selected as a contaminant of concern.

6.2 EXPOSURE ASSESSMENT

This assessment addresses the possible exposure of potential receptors at MOTBY to contaminants of concern associated with the studied sites. Current activities at MOTBY are expected to continue into the foreseeable future, and thus current and future exposures are assumed to be identical. Relevant human exposure, however, is limited by the unique setting of this installation. Neither groundwater nor surface water are used for any human consumption or contact, and there is no anticipated use for them in the future. Since MOTBY is part of a highly urbanized/industrial area, recreation at the installation is primarily restricted to athletic activities such as baseball, soccer, or tennis. Thus, the most reasonable route for potential human exposure appears to be the inhalation of soil-generated dust by military personnel or civilian workers in the vicinity of sites with contaminated soil.

TABLE 6-3

Summary Selection of Contaminants of Concern
 Site 8
 MOTBY, New Jersey

<u>Constituent</u>	<u>Environmental Medium</u>	<u>Concentration Range</u>	<u>Units</u>	<u>Location of Maximum Detected Concentration</u>	<u>USEPA Weight of Evidence(a)</u>	<u>Exceedance of Standards Criteria(b)</u>
Benzo(a)pyrene	soil	321-735	ug/kg	8SS4	B2	NC
Benzo(b) fluoranthene	soil	536	ug/kg	8SS4	B2	NC
Chrysene	soil	503-858	ug/kg	8SS4	B2	NC
Arsenic	soil	20,400- 490,000	ug/kg	8SS2	A	Typical soil

(a) See Table 6-1 footnotes.

(b) See Table 6-1 footnotes.

Since surface soils were found to be contaminated and uncovered by pavement at Sites 1, 2, and 7, these sites are evaluated in this assessment for human exposure via soil-generated dust. At the other sites, either no contaminants of concern were identified (Sites 3, 4, and 5), or the surface soils are covered with concrete, asphalt, or gravel (Sites 6 and 8), thereby eliminating the potential for generation of ambient dust from site soils. Although contaminants of concern have been selected for Sites 6 and 8, a complete exposure pathway (from source to receptor) is not present under current or future use. In the event of excavation or construction activities at these two sites, it is expected that health and safety protocols will limit the contact of workers with constituents of the soil.

6.2.1 Site 1, Landfill, and Site 2, Former Naval Storage Area

Due to their proximity, Sites 1 and 2 are combined in this assessment. For a conservative estimate of exposure (or mean annual chronic daily intake) via dust inhalation at these sites, maximum detected soil concentrations are used as the exposure point concentration. Since access is restricted and authorized installation personnel rarely visit these sites, it is reasonable to assume that their contact with the sites is less than 1 hour/week. Similarly, an indoor exposure was not considered because residential buildings for enlisted personnel are more than 600 feet from Site 2 and not in the pathway of any dust plume that could be transported by prevailing winds (MOTBY, 1982). However, recreational areas (i.e., tennis courts) for enlisted personnel are located within 250 feet of the sites, as shown in Figure 2-3. During time spent outdoors in recreational activities, military personnel could potentially be exposed to ambient dust generated at the sites. It must be emphasized that the athletic fields themselves are not contaminated, thus precluding direct contact with contaminated soil.

From the Exposure Factors Handbook (USEPA, 1988), recommended values for annual average hours per week spent outdoors near home are as follows--children, 2.03 and less (depending on age); women, 2.13; and men, 4.17. In this assessment, the largest value--4.17 hours/week (or 0.60 hours/day)--is the value used for time spent outdoors. For carcinogenic effects, this value is adjusted by the fractional period of lifetime exposure (assumed to be a 10-year military enlistment in a 75-year lifetime) (USEPA, 1988). Thus, for carcinogenic effects, the exposure duration is 0.080 hours/day. It is further assumed that all dust particles are generated from soil at Sites 1 and 2, and that all respired particles remain in the receptor. Thus:

$$\text{Exposure} = \frac{(C_{\text{soil}})(\text{CR})(\text{ED})}{\text{BW}}$$

where:

C_{soil} = concentration of contaminant in surficial soil (mg/kg)

CR = consumption rate of surficial soil ($8.9\text{E-}08$ kg/hr), which is calculated as the product of the ambient particulate level in air, $\text{E-}07$ kg/m³ (Small, 1988), and the adult hourly air intake for heavy activity, $8.9\text{E-}01$ m³/hr (USEPA, 1988)

ED = annual average hours exposed per day ($6.0\text{E-}01$ hr/day for non-carcinogenic effects and $8.0\text{E-}02$ hr/day for carcinogenic effects)

BW = 70-kilogram body weight (USEPA, 1988)

The estimated exposures to contaminants of concern in soil at Sites 1 and 2 (Table 6-1) are provided in Table 6-4. Soil ingestion is not considered a relevant exposure pathway because Site 2 is a restricted, fenced area with a dense cover of weeds (USEPA, 1989).

6.2.2 Site 7, Building 105 Drum Storage Area

For exposure via dust inhalation at Site 7, the concentration of contaminants of concern at sampling location 7SS1A (Table 6-2) is assumed to be the soil concentration. It is further assumed that nonmilitary personnel could be employed exclusively at this site during a 30-year working career. Thus, the exposure duration (ED) for noncarcinogenic effects is calculated as follows:

$$\begin{aligned}\text{ED}(\text{noncarc}) &= (40 \text{ hr/wk})(47 \text{ work-weeks/yr})(1 \text{ yr}/365 \text{ days}) \\ &= 5.2 \text{ hr/day}\end{aligned}$$

For carcinogenic effects, this value is adjusted by the fractional period of lifetime exposure (30-year career in a 75-year lifetime) (USEPA, 1988):

$$\begin{aligned}\text{ED}(\text{carc}) &= (5.2 \text{ hr/day})(30/75) \\ &= 2.1 \text{ hr/day}\end{aligned}$$

Other assumptions regarding exposure, such as consumption rate of surficial soil (CR) and receptor body weight (BW), are the same as those used at Sites 1 and 2. Although soil ingestion and dermal absorption could be relevant exposure pathways

TABLE 6-4

Summary of Carcinogenic Risk and Toxic Hazard from Inhalation
of Soil-Generated Dust at Sites 1, 2, and 7
MOTBY, New Jersey

Contaminants of Concern(a)	Potency Factor (Inhalation) for Carcinogenic Effects(b) (mg/kg/day) ⁻¹	Acceptable Intake (Chronic Inhalation) for Noncarcinogenic Effect(b) (mg/kg/day)	Exposure				Carcinogenic Risk(e)		Noncarcinogenic Toxic Hazard Index(f)	
			Mean Annual Chronic Daily Intake (mg/kg/day)							
			Carcinogenic Effects(c)		Noncarcinogenic Effects(d)		Sites 1 & 2	Site 7	Sites 1 & 2	Site 7
			Sites 1 & 2	Site 7	Sites 1 & 2	Site 7				
Benzo(a)pyrene	6.1E+00	-	9.32E-10	3.07E-09	-	-	5.69E-09	1.87E-08	-	-
Benzo(b)fluoranthene	-	-	8.18E-10	2.96E-09	-	-	-	-	-	-
Chrysene	-	-	8.02E-10	3.55E-09	-	-	-	-	-	-
Ideno(1,2,3-cd)pyrene	-	-	4.01E-10	-	-	-	-	-	-	-
Phenol	-	2.0E-02	-	-	-	5.33E-09	-	-	-	2.67E-07
Antimony	-	-	-	-	1.82E-08	-	-	-	-	-
Arsenic	5.0E+01	-	8.50E-09	-	-	-	4.25E-07	-	-	-
Cadmium	6.1E+00	-	5.95E-10	-	-	-	3.63E-09	-	-	-
Copper	-	1.0E-02	-	-	8.36E-07	-	-	-	8.36E-05	-
Lead	-	4.3E-04	-	-	4.26E-07	-	-	-	9.91E-04	-
Zinc	-	1.0E-02	-	-	4.03E-06	-	-	-	4.03E-04	-

- (a) Contaminants of concern that were detected in soil at Sites 1, 2, and 7.
- (b) Potency factors and acceptable intakes are from the EPA IRIS and PHRED databases. Blank spaces throughout this table indicate that either potency factors or acceptable intakes for inhalation are unavailable.
- (c) The exposure (or mean annual chronic daily intake) for carcinogenic effects at Sites 1 and 2 is estimated for nearby residents over a 10-year military enlistment period in a 75-year lifetime (Section 6.2.1). At Site 7, the exposure for carcinogenic effects is estimated for nonmilitary personnel over a 30-year career in a 75-year lifetime (Section 6.2.2).
- (d) The exposure (or mean annual chronic daily intake) for noncarcinogenic effects is estimated on an annual basis (Section 6.2.1).
- (e) Carcinogenic risk is estimated as the product of the potency factor and the carcinogenic exposure. Risks that are less than the USEPA remediation reference risk of E-06 are acceptable.
- (f) Noncarcinogenic toxic hazard index is estimated as the ratio of noncarcinogenic exposure to acceptable intake. Hazard index values less than E+00 are acceptable.

for nonmilitary personnel at Site 7, their significance was diminished when compared to exposure via dust inhalation, since the workers are assumed to wear coveralls and gloves and to wash their hands during rest periods or before lunch. The estimated exposures to contaminants of concern at Site 7 (Table 6-2) are given in Table 6-4.

6.3 RISK AND TOXIC HAZARD CHARACTERIZATION

Evaluations of carcinogenic risk and noncarcinogenic toxic hazard for Sites 1, 2, and 7 are based on the estimated exposures calculated for inhalation of soil-generated dust by residents near Sites 1 and 2 and nonmilitary personnel working at Site 7. The results are summarized in Table 6-4. Carcinogenic risk in each case is below the USEPA remediation reference risk level of E-06 and is, therefore, acceptable. For noncarcinogenic effects, the estimated exposure is considerably less than the acceptable intake (chronic inhalation); therefore, the toxic hazard index is less than E+00, indicating that it is also acceptable.

6.4 ENVIRONMENTAL IMPACT

The principal environmental fates of the contaminants of concern--as well as detected analytes that were not selected due to lack of information on health effects--preclude their significant contribution to the waters encompassing MOTBY. Tables 6-5 and 6-6 summarize the mobility and persistence of these chemicals. The potential impact of inorganic soil and water constituents at MOTBY on the surrounding Upper New York Bay has been discussed in Section 5.4 as being minimal due to the quality of the bay.

6.4.1 Site 1, Landfill, and Site 2, Former Naval Storage Area

Most of the detected organic constituents at these two sites are not very mobile and will ultimately undergo biodegradation. Chlorobenzene and naphthalene are the only organic constituents that can be considered mobile, but their principal environmental fate is volatilization and tropospheric photodegradation. Of the metals, only antimony and zinc can be easily leached from soil, but the concentration levels present at MOTBY should not significantly affect the surrounding waters of Upper New York Bay.

6.4.2 Site 3, Underground Storage Tanks, and Site 5, Battery Acid Pit

The contents of the Site 3 tanks are potentially hazardous if the tanks leak into the environment. No nontank media sampling was performed, and any present

TABLE 6-5

Summary of Environmental Fate Process for Organic Chemicals Detected at MOTBY(a)

<u>Contaminant of Concern</u>	<u>Site/Media</u>	<u>Photolysis/Oxidation</u>	<u>Hydrolysis</u>	<u>Volatilization</u>
<u>VOCs</u>				
Chlorobenzene	Sites 1 & 2/sed	Tropospheric half-life is reported as approximately 3.5 days.	Not significant.	Half-life from water is about 8 hours.
Tetrachloroethylene	Site 7/soil	Tropospheric half-life is about 50 days.	Relevance uncertain.	Significance uncertain.
<u>BNAs</u>				
Dibenzofuran	Sites 1 & 2/sed Site 4/soil Site 6/soil Site 7/soil	Not significant.	Not relevant.	Significance uncertain.
Di-n-butyl phthalate	Sites 1 & 2/sed	Not significant.	Very slow unless catalyzed by microbial enzymes.	Significance uncertain.
Diethyl phthalate	Site 8/soil	Not significant.	Half-life is about 18 months; much shorter if catalyzed by microbial extracellular enzymes.	Significance uncertain.
Hexachlorobenzene	Site 6/soil	Photolytic half-life in water is 5-18 days.	Not significant.	Volatilizes slowly from soil if the sorptive capacity of the soil is exceeded.
2-Methylnaphthalene	Site 4/soil Site 7/soil Site 8/soil	Tropospheric half-life is estimated as less than 20 hours.	Not relevant.	Significance uncertain.
Naphthalene	Sites 1 & 2/all media	Tropospheric half-life is estimated as 20-50 hours.	Not relevant.	Volatilizes from water with a half-life of 1 to 2 days.
Paraffinic hydrocarbons	Site 8/soil	Tropospheric half-life is 3-5 days.	Not relevant.	Significance uncertain.
Phenol	Site 7/soil	Not significant.	Not relevant.	Not significant.
Polycyclic aromatic hydrocarbons	Sites 1 & 2/soil, sed, gw Site 7/soil Site 6/soil Site 8/soil	In aerated soil, oxidation is estimated to occur with a half-life of about 4 days.	Not relevant.	Volatilization from sediment and wet soil may be slow but significant.

TABLE 6-5 (cont'd)

Contaminant of Concern	Sorption	Organic Soil Adsorption Coefficient K_{oc}	Bioaccumulation/Biotransformation	Aquatic Bioconcentration Factor (BCF)	Principal Environmental Fate
<u>VOCs</u>					
Chlorobenzene	Mobile in soil and sediments.	3.3E+02	Little potential for bioaccumulation; slow biodegradation in the presence of other nutrients.	1.0E+0.1	Volatilization and tropospheric photodegradation.
Tetrachloroethylene	Slightly mobile in soil.	3.6E+02	Biodegraded under anaerobic conditions.	3.1E+01	Biodegradation.
<u>BNAs</u>					
Dibenzofuran	Strongly sorbed to soil and sediment.	--	Slowly degraded by microorganisms in soil or sediment.	--	Sorption and slow biodegradation.
Di-n-butyl phthalate	Dominant physical process in soil and sediment.	1.7E+05	Soil and sediment microorganisms readily degrade phthalate esters.	--	Biodegradation in soil and sediment.
Diethyl phthalate	Slightly mobile in soil and sediment.	1.4E+02	Biodegradable by all soil organisms.	1.2E+02	Biodegradation and hydrolysis.
Hexachlorobenzene	Generally immobile, but can be transported as an adsorbate on humic substances.	3.9E+03	Bioaccumulates in aquatic organisms and the roots of terrestrial plants.	8.7E+03	Sorption and volatilization in soil.
2-Methylnaphthalene	Moderately sorbed to soil and sediment.	--	Biodegraded by soil organisms.	--	Biodegradation.
Naphthalene	Moderately sorbed to soil and sediment.	9.4E+02	Biodegraded by soil organisms.	4.3E+02	Volatilization, leaching, and biodegradation.
Paraffinic hydrocarbons	Strongly sorbed to soil and sediment.	--	Slow biodegradation in soil.	--	Slow biodegradation.
Phenol	Mobile in soil and sediment.	1.4E+01	Microbial degradation in all media except air.	1.4E+00	Biodegradation.
Polycyclic aromatic hydrocarbons	Immobile.	1.4E+04	Bioaccumulated, but not persistent since they are biodegraded by most organisms.	2.6E+03	Sorption, oxidation, and biodegradation.

(a) Based on information given in Callahan et al. (1979) and the EPA PHRED Database. Detected chemicals that were not considered representative of the study sites are excluded.

TABLE 6-6

Summary of Environmental Fate Processes for Metals in Exceedance of Standards/Criteria at MOTBY (a)

Chemical	Sites/ Media	Chemical Speciation	Volatilization	Sorption	Bioaccumulation/ Biotransformation	Aquatic Bioconcentration Factor (BCF)	Principal Environmental Fate
Antimony	Sites 1 & 2/ soil	Stable as the hydrated oxide, Sb_2O_3 , and as soluble salts of the anion, SbO_3^{3-} .	Small portions may be mobilized as volatile biomethylation products.	Sorption to clay and organic matter controls the rate at which antimony is leached.	Not accumulated, but it may be biomethylated.	-	Leaching appears to be the principal fate of antimony in landfills
Arsenic	Sites 1 & 2/ sed, soil Site 4/soil Site 8/soil	Formation of elemental As and arsine are unlikely in soil, groundwater, or surface water. Arsenic (V) oxide can become reduced to the arsenic (III) oxide.	The biotransformation products dimethylarsine and trimethylarsine are very volatile.	Monovalent arsenate and arsenite ions are the most strongly sorbed soluble species.	Microbial methylation in soil is considered to be very slow. Methylarsines can be produced by many yeasts, bacteria, and fungi. Bioaccumulation of arsenic from soil is slight.	4.4	Environmental transport of arsenic is cyclical, but landfilled material can act as a long-term source.
Barium	Sites 1 & 2/ sw	Present as the +2 cation in natural environments.	Not considered relevant.	Precipitates from solution as the carbonate or sulfate. Strongly sorbed by clay.	Not considered relevant.	-	Sorption is the dominant fate, but it can be mobilized by hard water.
Cadmium	Sites 1 & 2/ soil	Present as the +2 cation in natural environments.	Not considered relevant.	Strongly sorbed to clays, organic matter, and metal oxides.	Potentially accumulated by plants and animals.	-	Landfilled cadmium is strongly sorbed.
Iron	Sites 1 & 2/ all media Site 4/soil Site 8/soil	Present as the +2 and +3 cation; also precipitates as carbonate and hydroxide in aerobic conditions or the sulfide in anaerobic conditions.	Not considered relevant.	Strongly sorbed to clays, organic matter, and metal oxides.	Enters into the metabolism of all organisms.	-	Landfilled iron is strongly sorbed.
Copper	Sites 1 & 2/ sw, soil	Present as the +2 cation in natural environments.	Not significant.	Strongly sorbed by clay minerals and organic matter.	Potentially accumulated by all organisms.	290	Sorption is the dominant fate in soil and sediment.
Lead	Sites 1 & 2/ all media	Carbonate and sulfate control solubility in aerobic environments; under anaerobic conditions the sulfide will precipitate.	Not significant.	Strongly sorbed by components of soil.	Accumulated primarily from the atmosphere.	49	Sorption is the dominant fate in soil and sediment.
Manganese	Sites 1 & 2/ gw, sw	Transformations occur between Mn (II), Mn (III), and Mn (IV); Mn (II) predominates.	Not considered relevant.	Hydrous manganese oxides have an affinity for clay minerals and trace metals.	Accumulated by aquatic organisms to a variable extent.		Manganese is ubiquitous in the soil environment.
Mercury	Sites 1 & 2/sw	Stable oxidation states in the terrestrial environment are Hg (I), Hg (II), and elemental mercury, which predominates in aerobic soil above pH 5. Methyl and dimethyl mercury also occur naturally in soil.	Important in the cyclical distribution of environmental mercury. Both elemental mercury and its methylated forms are volatilized from soil.	Mercury and its compounds are strongly sorbed by soil components.	Accumulated by many organisms and methylated by microbial action.	5,500	All species of mercury are apparently sorbed strongly by the surfaces of soil constituents, and thus leaching from soil may not be important.
Zinc	Sites 1 & 2/ sw, soil	Predominant species is the Zn (+2) cation.	Not important.	Not strongly sorbed by soil constituents and is considered easily mobilized.	Bioaccumulated by both plants and animals.	432	Strong tendency to be leached.

(a) Based on information given in Callahan et al. (1979) and the EPA PHRED Database.

impact to the environment cannot be determined. Site 5 appears to have no chemical constituents that could adversely affect the surrounding area.

6.4.3 Site 4, DRMO Drum Storage Area

The two BNAs detected at this site--dibenzofuran and 2-methylnaphthalene--are not easily leached and should ultimately be degraded by soil organisms. The relatively low levels of those two chemicals at this site should not impact the environment of the surrounding area. Arsenic and iron were also detected at this site above typical soil levels, but they are not easily mobilized from soil.

6.4.4 Site 6, PCB Spill Area

Low levels of hexachlorobenzene, dibenzofuran, and two polycyclic aromatic hydrocarbons were detected at this site. All of them are strongly sorbed to soil and should not affect the surrounding area. The latter three are readily biodegraded, but hexachlorobenzene may persist in the soil. However, the relatively low concentrations detected should not adversely impact the surrounding environment.

6.4.5 Site 7, Building 105 Drum Storage Area

At Site 7, the low levels of phenol, dibenzofuran, and 2-methylnaphthalene detected in surficial soil are not expected to adversely impact the surrounding environment. Only phenol is easily leached, and all three are biodegraded by soil organisms. In soil sampled at a depth of 5 to 6 feet, tetrachloroethylene was found to be present at a level slightly above the detection limit. This organochlorine compound undergoes slow biodegradation in anaerobic environments and should not impact the surrounding areas. The detected contaminant concentrations were for soil underlying a thin surface layer of concentrated waste sludge resulting from spillage from the drums formerly stored at the site.

6.4.6 Site 8, Fire Training Area

The low levels of polycyclic aromatic hydrocarbons detected at Site 8 are strongly sorbed to soil components and are subject to degradation by all soil organisms. The detected paraffinic hydrocarbons are also strongly sorbed, but their biodegradation proceeds more slowly. The two other detected BNAs--diethyl phthalate and 2-methylnaphthalene--are more mobile in the soil environment, but

also more easily biodegraded. Of the detected metals, only concentrations of arsenic and iron exceeded typical values for soils of the eastern United States. The soil at Site 8 lies beneath 0.5 foot of compacted gravel, thereby eliminating the potential for direct exposure or soil erosion.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A summary of current environmental conditions for each of the eight sites addressed by the RI field program is presented in Section 5.0. Section 6.0 presents the results of the public health evaluation for each of the sites. The results indicate that although low concentrations of several contaminants have been detected in soils, groundwater, surface water, and sediment at Site 1, and in surface soils of other sites, the concentrations do not appear to pose a threat to human health or the environment. Because of the manmade character of the MOTBY peninsula, the aquatic environment of the Upper New York Bay is the only potential receptor that has been identified. The quality of potentially impacted groundwater or surface water entering the Upper New York Bay from MOTBY appears to be generally better than that of the receiving water body.

Based on the information provided in Sections 5.0 and 6.0, the proposed future action recommendations provided in Table 7-1 were developed. A recommendation for future action is provided for each site as follows:

- No further action--This recommendation is made for sites where the RI is considered complete, and no further actions appear to be warranted.
- Conduct FS--This recommendation applies to Site 3, which consists of containment structures (abandoned underground tanks). An FS is recommended to consider eliminating the potential for future contaminant releases from these structures as well as to consider possible engineering difficulties from removing the tanks and potentially undermining the stability of nearby buildings. Because of the unique hazards associated with the underground propane tank (Tank 23), an FS for this tank should be prepared separately from the other underground storage tanks.
- Initiate remedial action--This recommendation applies to Site 7, where drums containing hazardous waste had discharged contents on the surface. The surface area should be scraped to remove spill-contaminated surface soils.

TABLE 7-1
Summary of Proposed Recommendations
MOTBY, New Jersey

<u>Site No.</u>	<u>Site Name</u>	<u>Proposed Action</u>		
		<u>No Further Action</u>	<u>Conduct FS</u>	<u>Initiate Remedial Action</u>
1	Landfill	X		
2	Former Naval Storage Area	X		
3	Underground Storage Tanks		X	
4	DRMO Drum Storage Area	X		
5	Battery Acid Pit	X		
6	PCB Spill Area	X		
7	Building 105 Drum Storage Area			X
8	Fire Training Area	X		

Based on the results of the eight site evaluations, it is recommended that no further action be taken at six sites (Sites 1, 2, 4, 5, 6, and 8), that an FS be conducted for one site (Site 3), and that remedial actions be undertaken at one site (Site 7).

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APPENDIX A
Boring Logs and Well Construction Diagrams

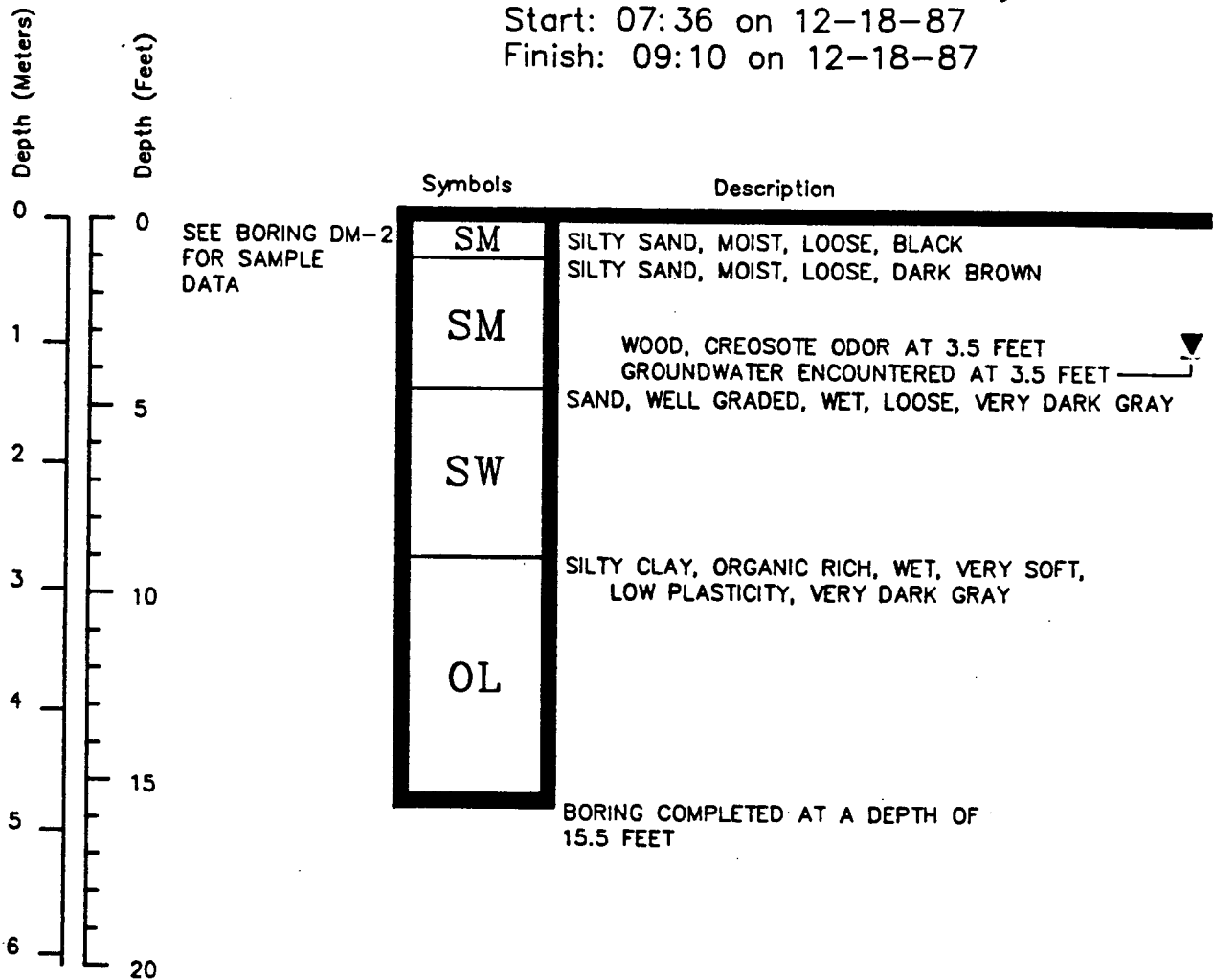
BORING DM-1

Surface Elevation: 11.76 Feet, MSL

Location: MOTBY, New Jersey

Start: 07:36 on 12-18-87

Finish: 09:10 on 12-18-87



LOG OF BORING

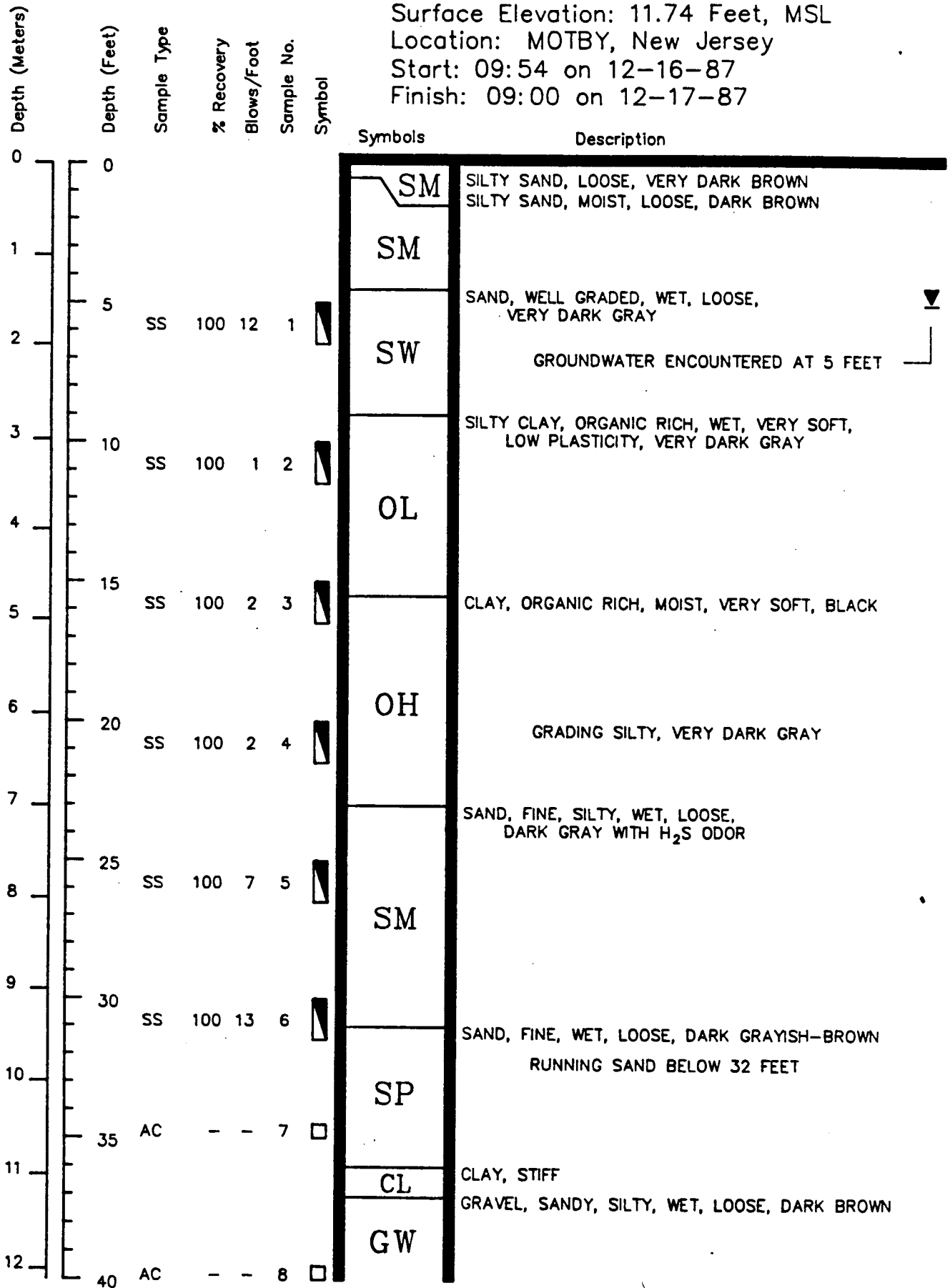
BORING DM-2

Surface Elevation: 11.74 Feet, MSL

Location: MOTBY, New Jersey

Start: 09:54 on 12-16-87

Finish: 09:00 on 12-17-87



LOG OF BORING

Dames & Moore

BORING DM-2, Cont'd.

Depth (Meters)	Depth (Feet)	Sample Type	% Recovery	Blows/Foot	Sample No.	Symbol	Symbols	Description
13	40							
14	45	AC	-	-	9	☐	GW	
15	50	AC	-	-	10	☐		

BORING COMPLETED AT A DEPTH OF 50.0 FEET

LOG OF BORING

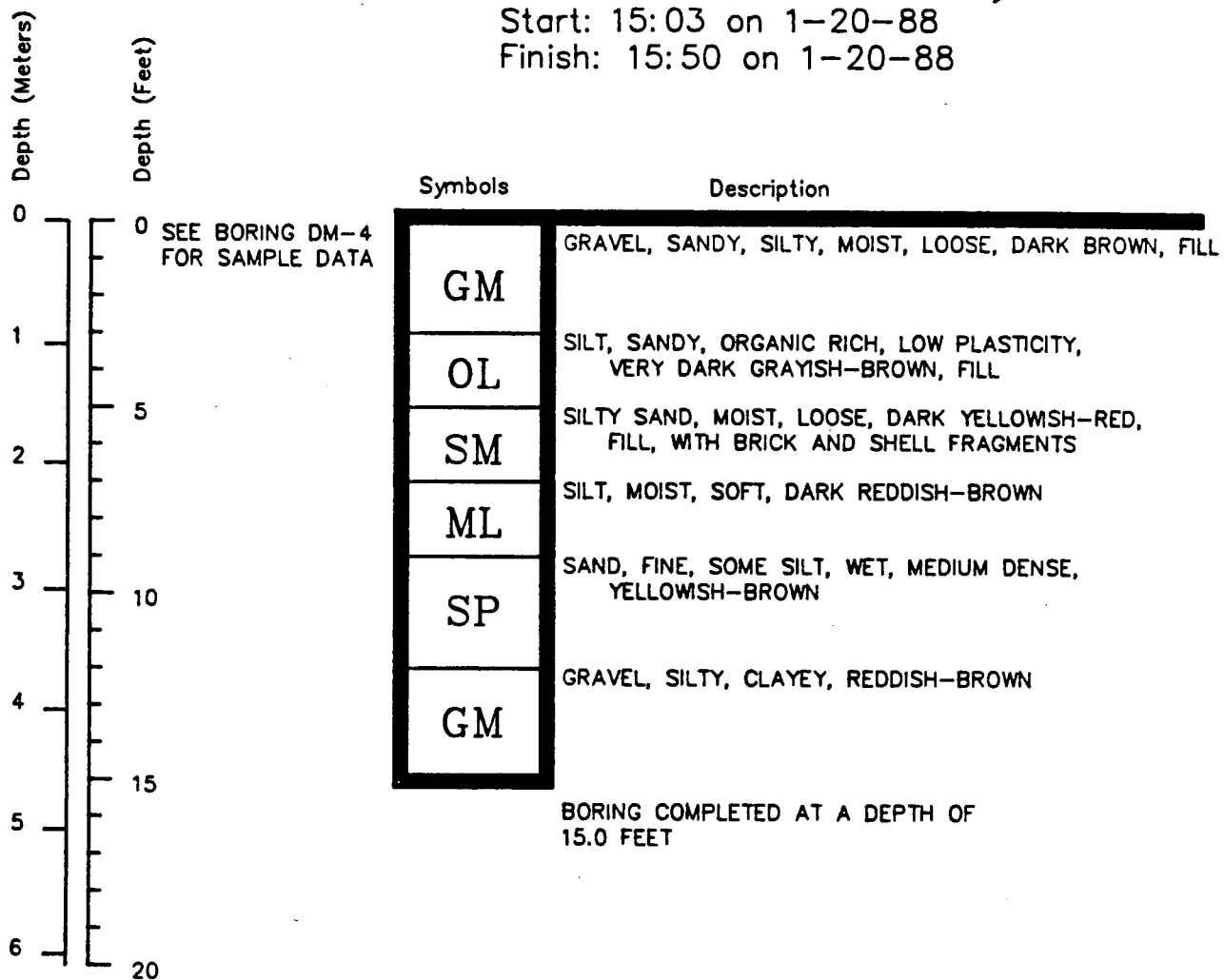
BORING DM-3

Surface Elevation: 20.98 Feet, MSL

Location: MOTBY, New Jersey

Start: 15:03 on 1-20-88

Finish: 15:50 on 1-20-88



LOG OF BORING

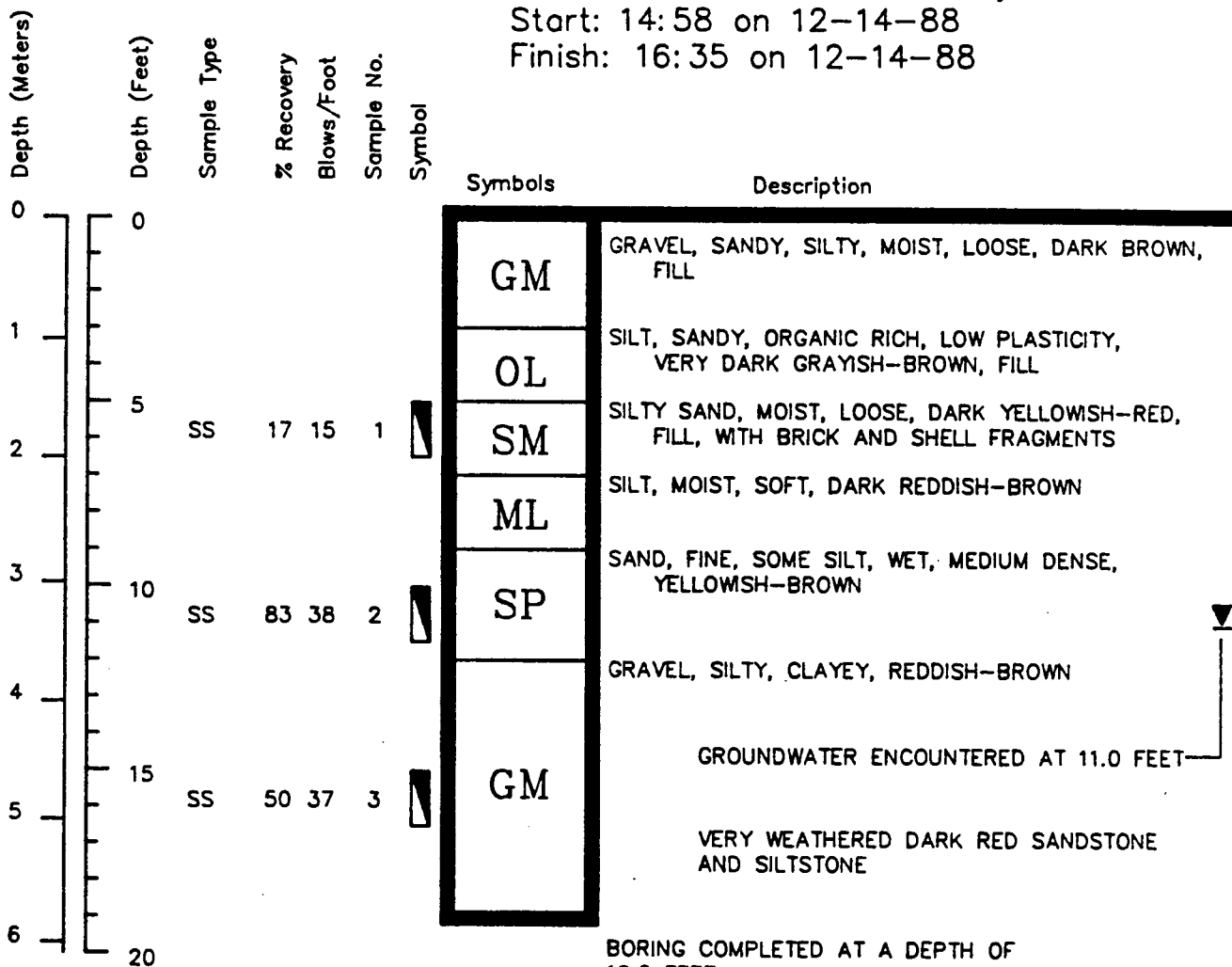
BORING DM-4

Surface Elevation: 20.5 Feet, MSL

Location: MOTBY, New Jersey

Start: 14:58 on 12-14-88

Finish: 16:35 on 12-14-88



LOG OF BORING

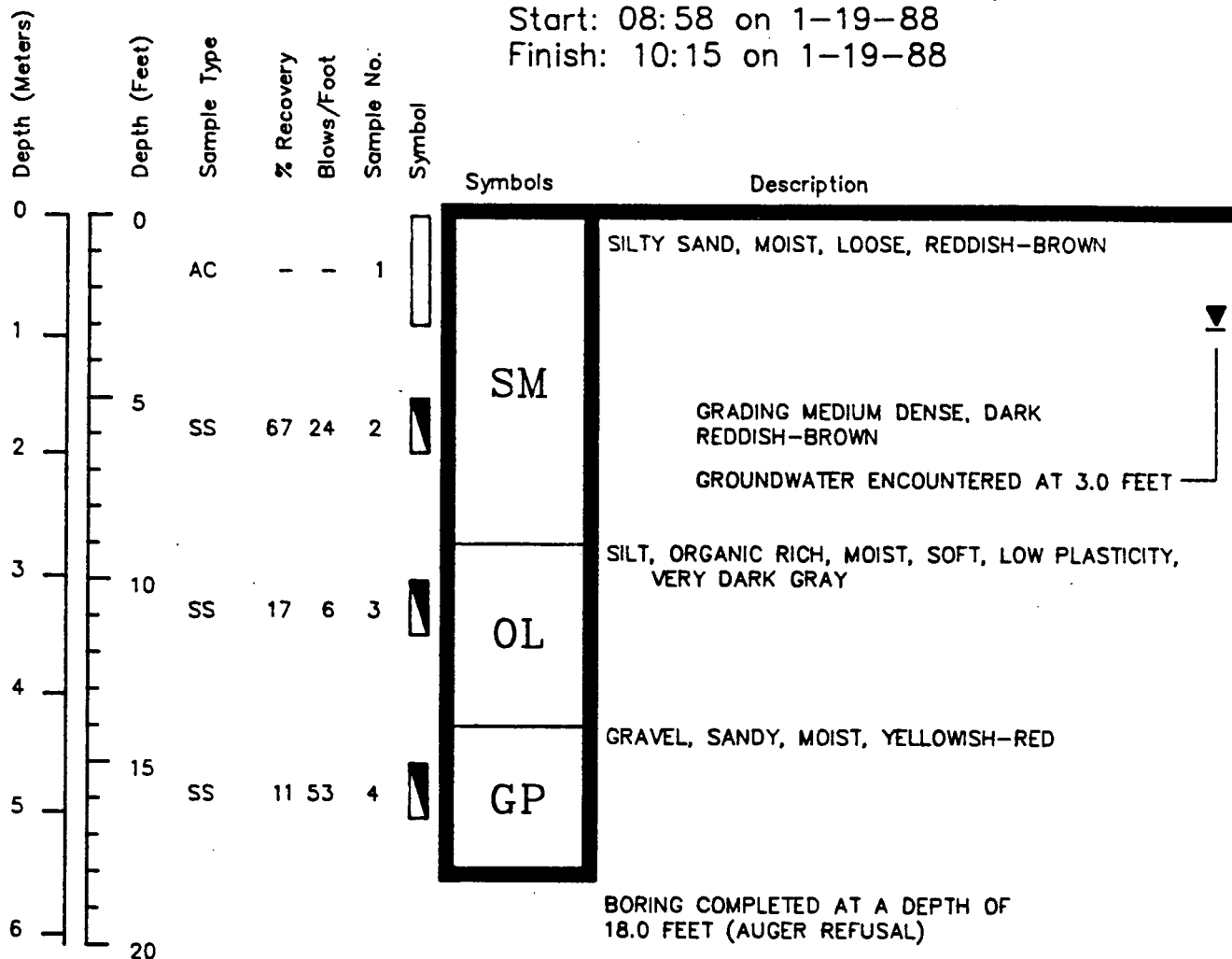
BORING DM-4B

Surface Elevation: 11.5 Feet, MSL

Location: MOTBY, New Jersey

Start: 08:58 on 1-19-88

Finish: 10:15 on 1-19-88



LOG OF BORING

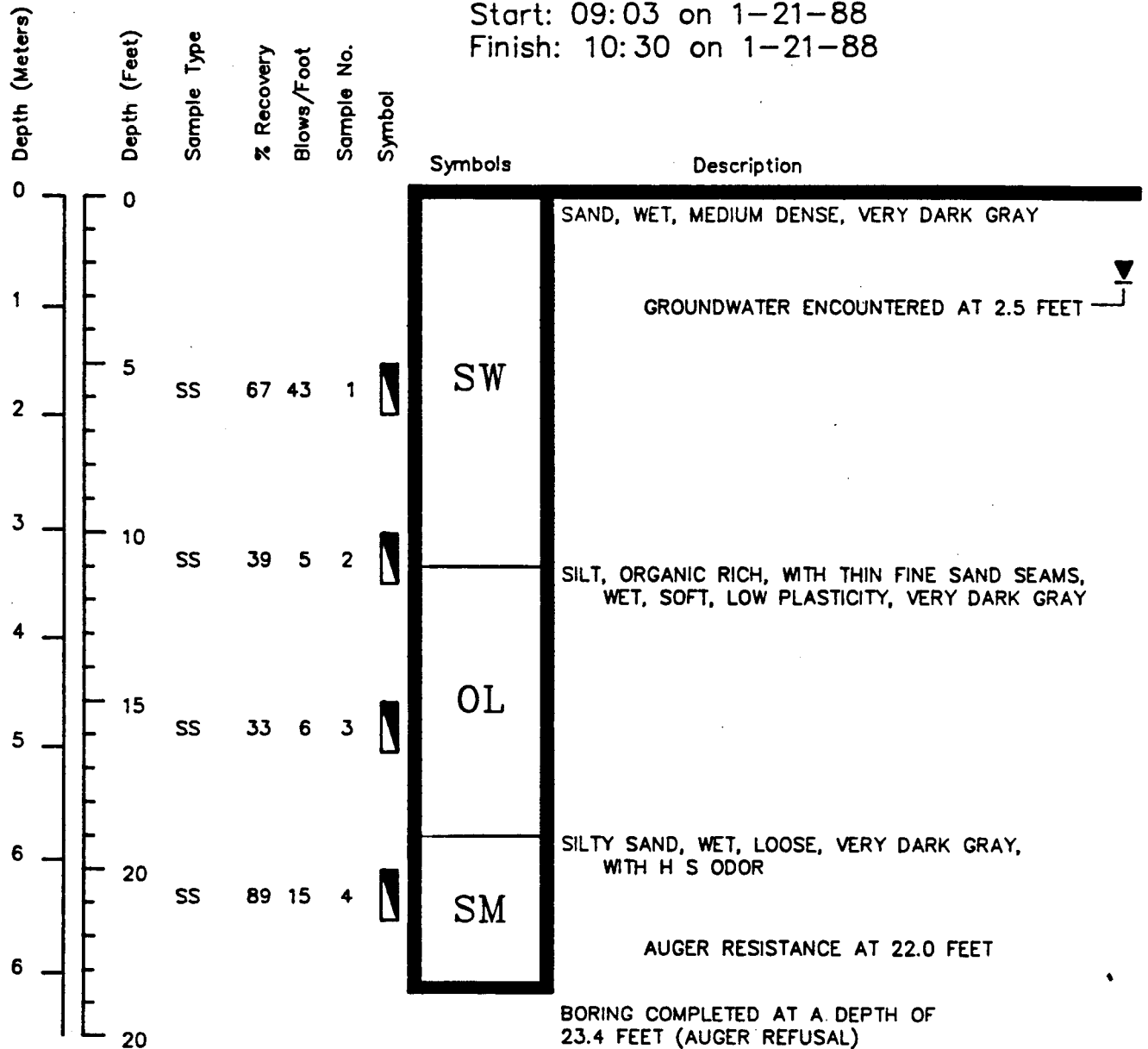
BORING DM-4C

Surface Elevation: 11.11 Feet, MSL

Location: MOTBY, New Jersey

Start: 09:03 on 1-21-88

Finish: 10:30 on 1-21-88



LOG OF BORING

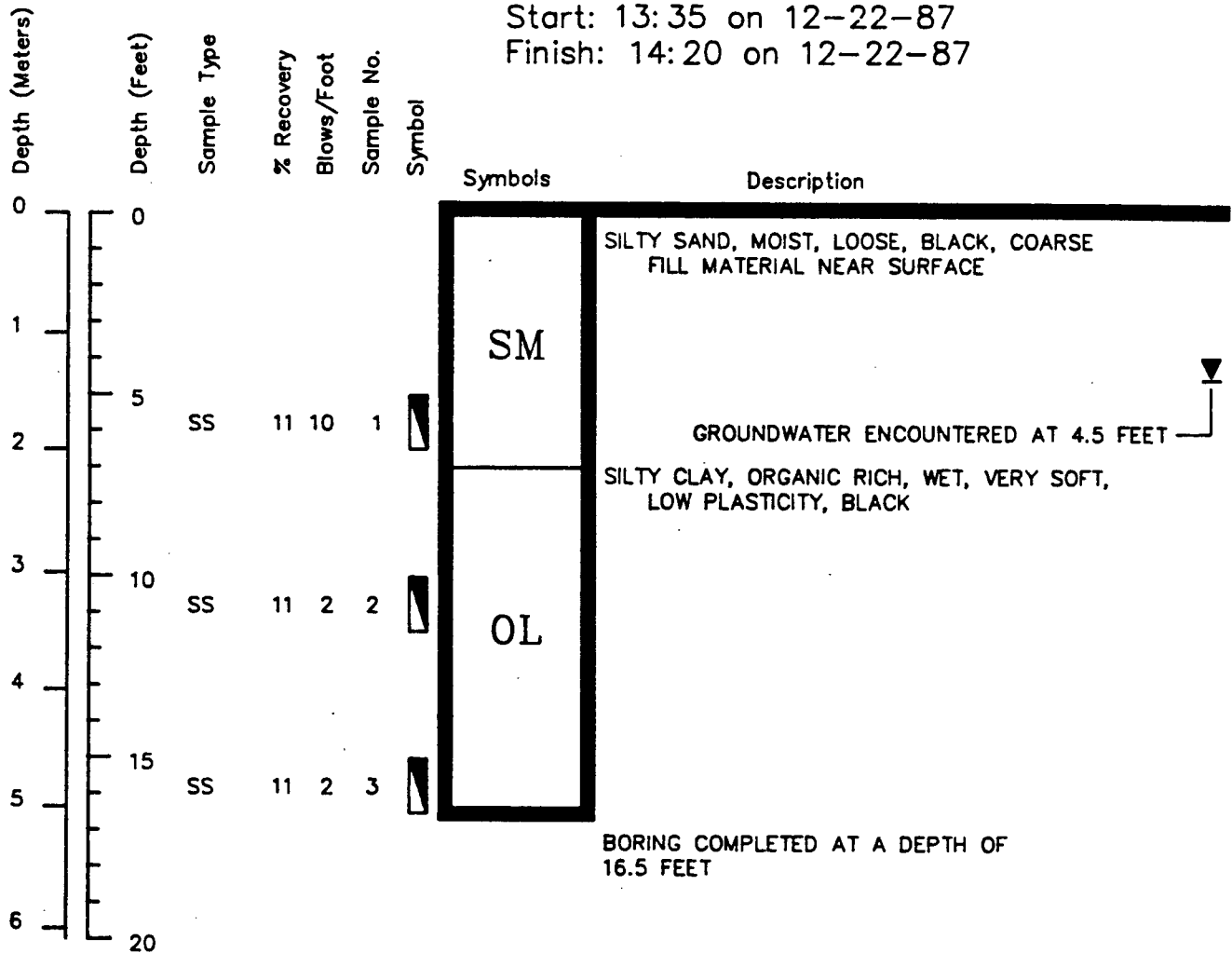
BORING DM-5

Surface Elevation: 11.92 Feet, MSL

Location: MOTBY, New Jersey

Start: 13:35 on 12-22-87

Finish: 14:20 on 12-22-87



LOG OF BORING

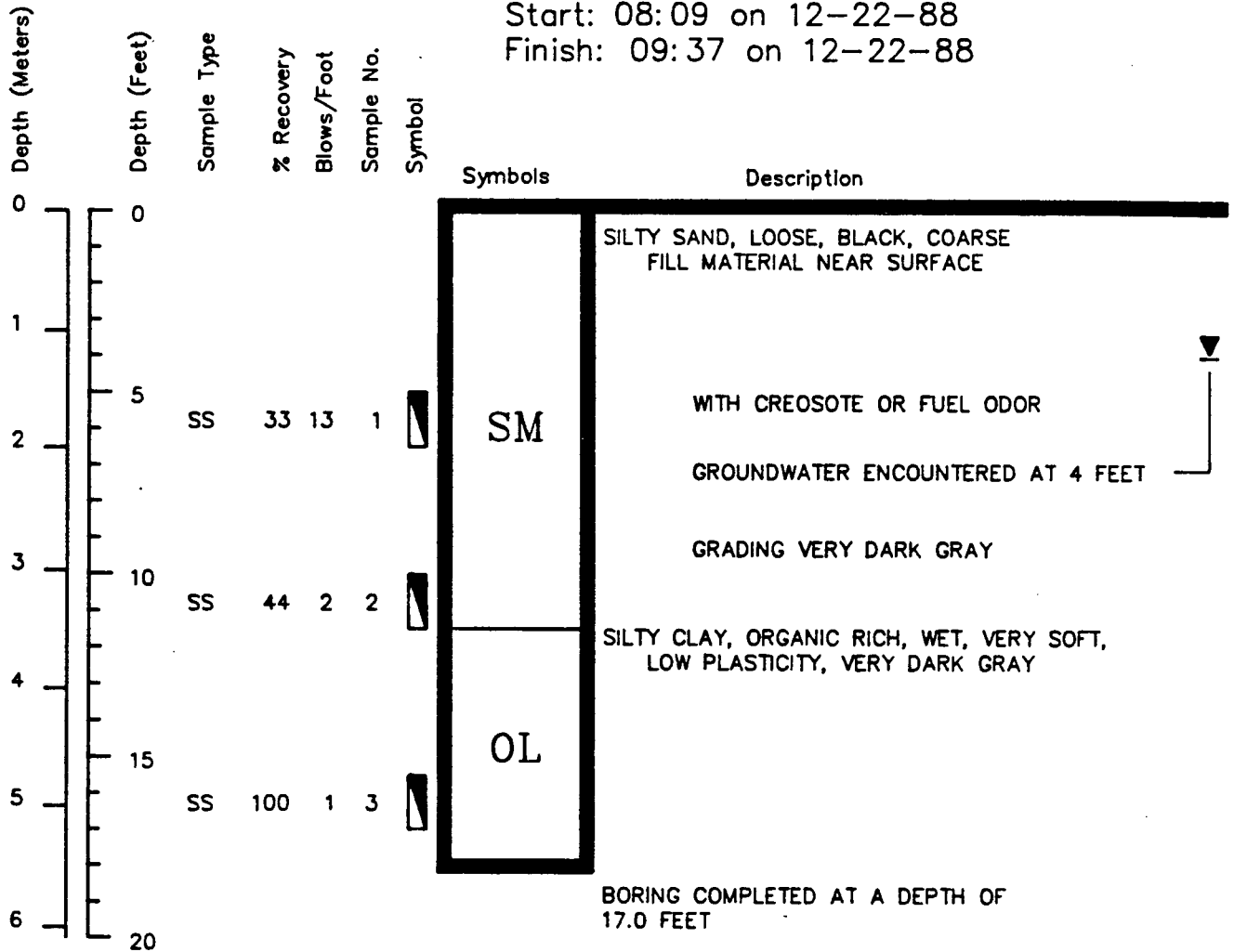
BORING DM-6

Surface Elevation: 11.91 Feet, MSL

Location: MOTBY, New Jersey

Start: 08:09 on 12-22-88

Finish: 09:37 on 12-22-88



LOG OF BORING









BORING DM-7

Surface Elevation: 13.29 Feet, MSL

Location: MOTBY, New Jersey

Start: 11:15 on 1-5-88

Finish: 14:30 on 1-5-88

Depth (Meters)	Depth (Feet)	Sample Type	% Recovery	Blows/Foot	Sample No.	Symbol	Symbols	Description
0	0							ASPHALT
								SAND, LOOSE, DARK BROWN
1								
	5	SS	89	12	1		SP	GROUNDWATER ENCOUNTERED AT 4.5 FEET
2								
	10	SS	11	5	2			GRADING VERY DARK GRAY
3								
	15	U	89	5	3		SM	SILTY SAND, WET, SOFT, VERY DARK GRAYISH-BROWN
4								
	20	SS	100	4	4		OH	SILT, ORGANIC RICH, MOIST, VERY SOFT, VERY DARK GRAY, WITH TRACE SHELL FRACMENTS
5								
	25	SS	100	15	5			SAND, FINE, WET, MEDIUM DENSE, DARK GRAY, WITH H ₂ S ODOR
6								
	30	SS	100	13	6		SP	
7								
	35	AC	-	-	7		CL	CLAY, STIFF
8								SAND, TRACE GRAVEL, WET, VERY LOOSE, DARK BROWN
	40	AC	-	-	8		SW	

LOG OF BORING

Dames & Moore

BORING DM-7, Cont'd.

Depth (Meters)	Depth (Feet)	Sample Type	% Recovery	Blows/Foot	Sample No.	Symbol	Symbols	Description
	40						SW	
13								
	45	AC	-	-	9	□	SM	SILTY SAND, WET, LOOSE, VERY DARK GRAY
14								
15								
	50	AC	-	-	10	□		BORING COMPLETED AT A DEPTH OF 50.0 FEET

LOG OF BORING

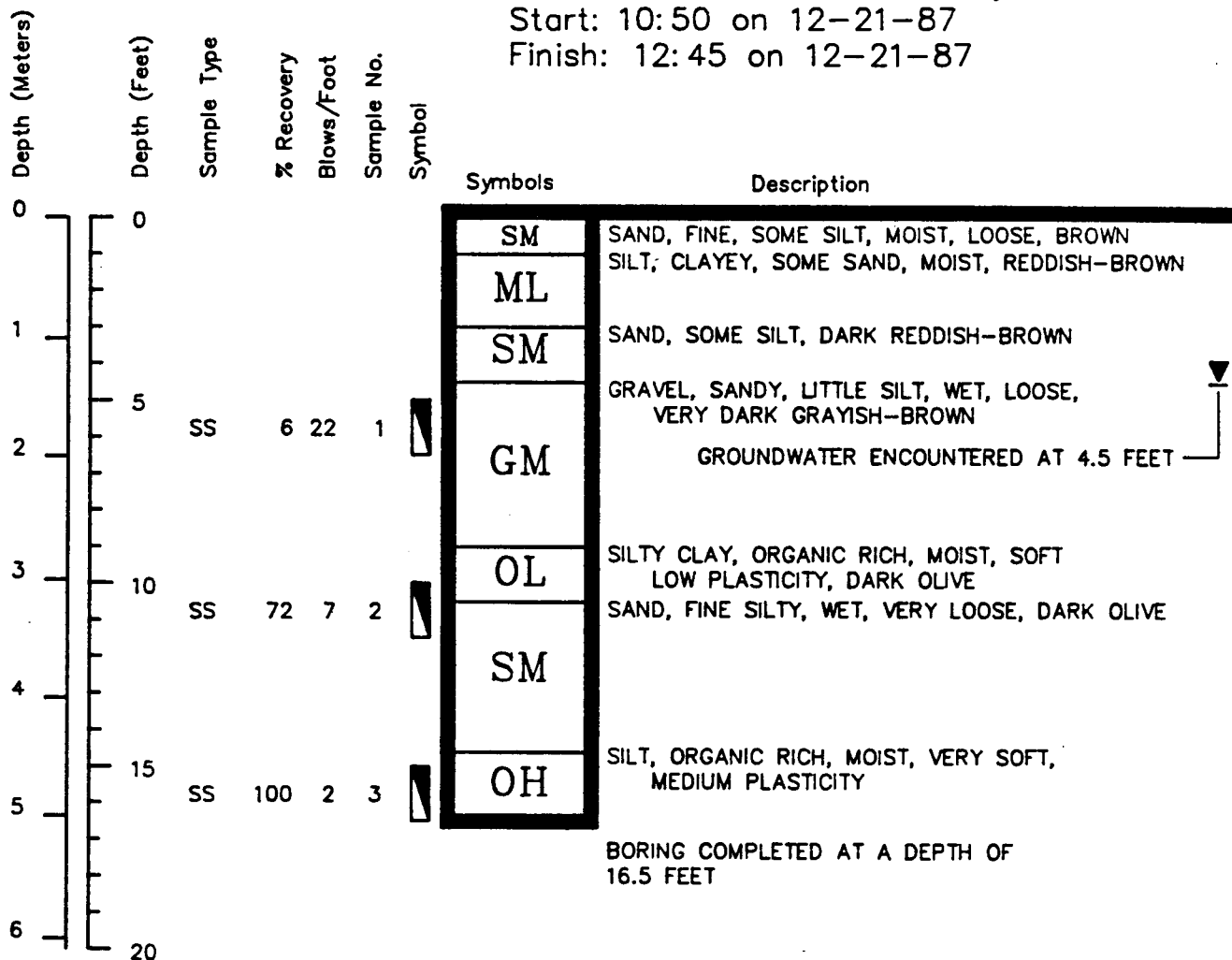
BORING DM-8

Surface Elevation: 11.21 Feet, MSL

Location: MOTBY, New Jersey

Start: 10:50 on 12-21-87

Finish: 12:45 on 12-21-87



LOG OF BORING

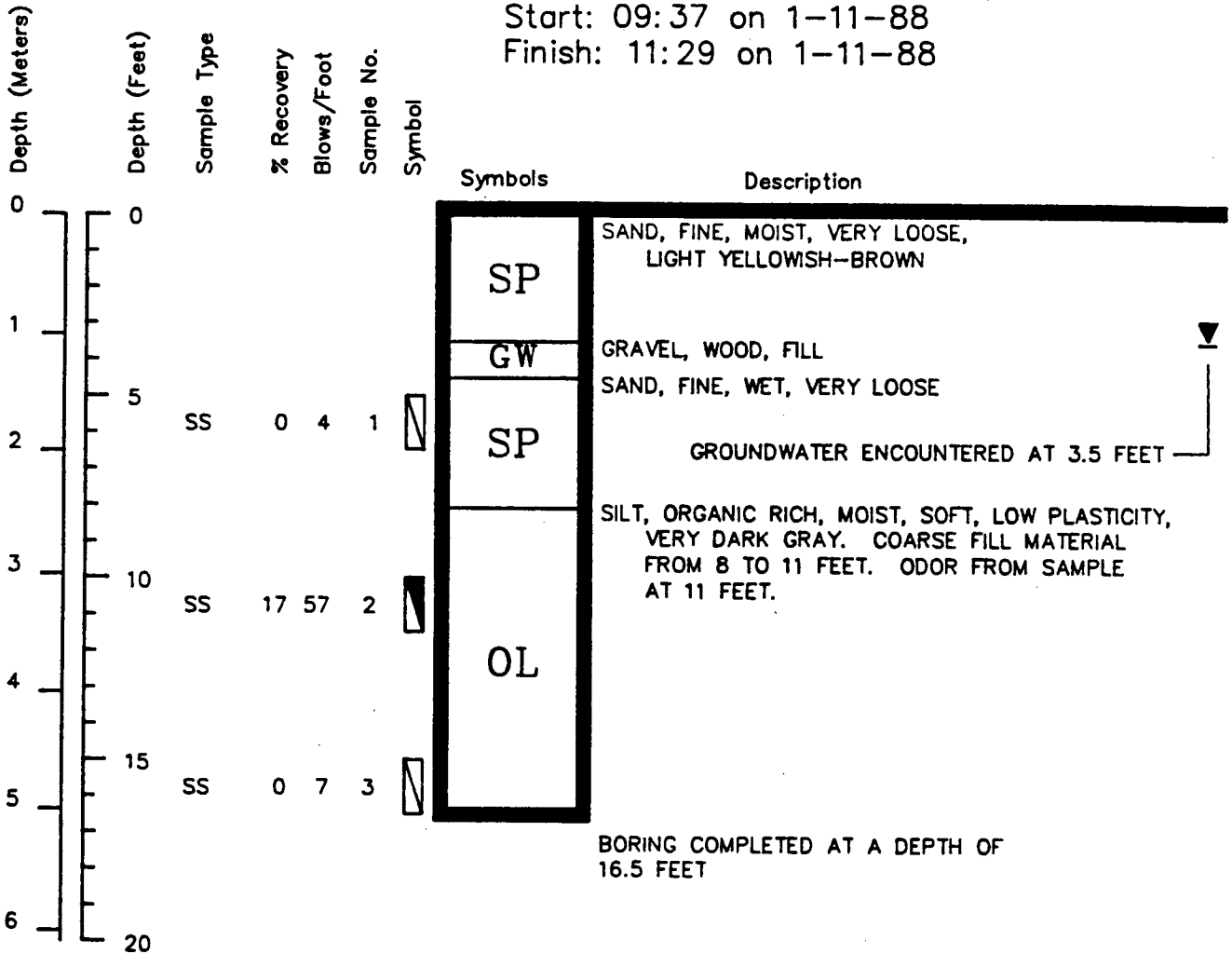
BORING DM-9

Surface Elevation: 11.57 Feet, MSL

Location: MOTBY, New Jersey

Start: 09:37 on 1-11-88

Finish: 11:29 on 1-11-88



LOG OF BORING

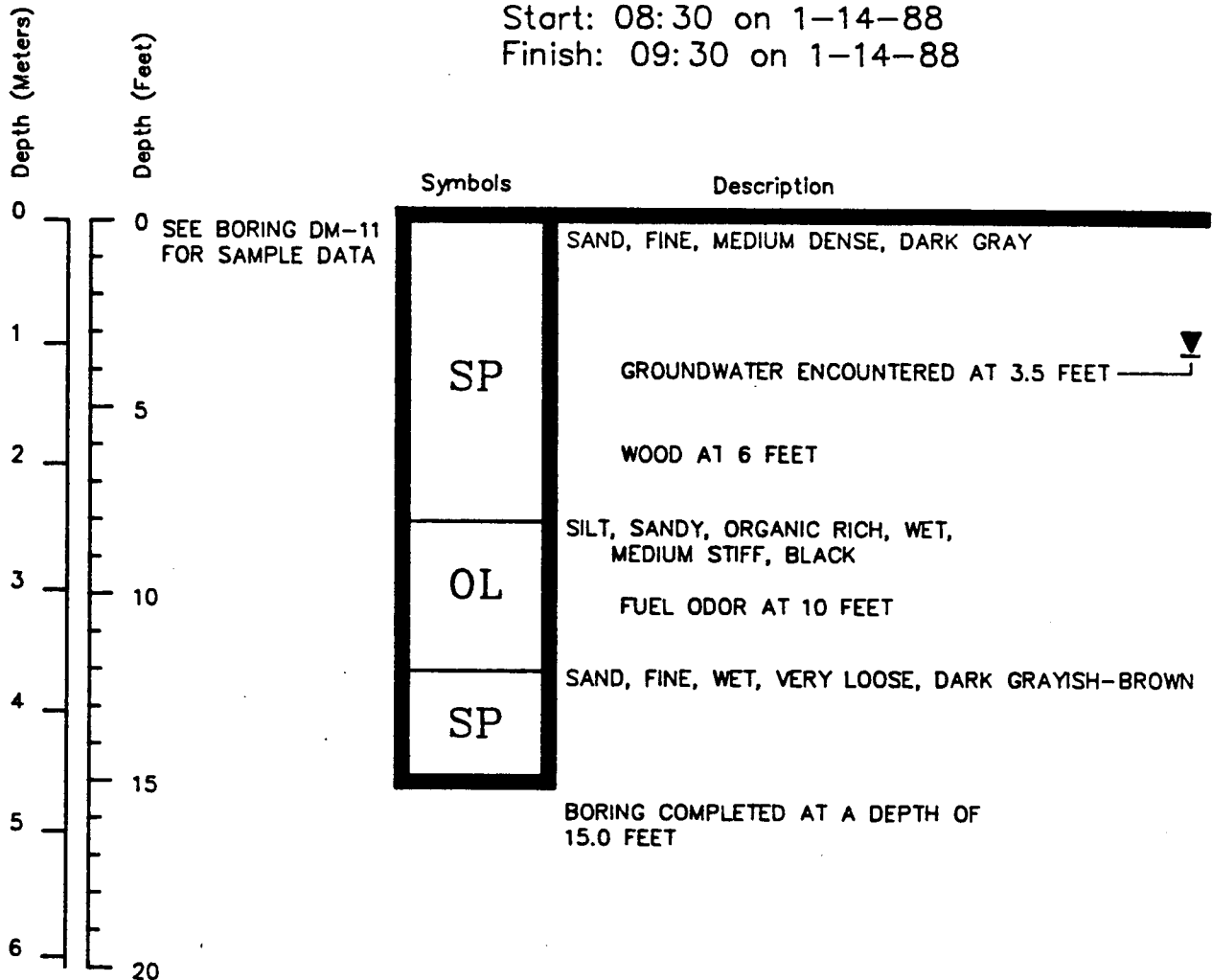
BORING DM-10

Surface Elevation: 10.48 Feet, MSL

Location: MOTBY, New Jersey

Start: 08:30 on 1-14-88

Finish: 09:30 on 1-14-88



LOG OF BORING

BORING DM-11

Surface Elevation: 10.56 Feet, MSL

Location: MOTBY, New Jersey

Start: 08:58 on 1-12-88



Finish: 13:38 on 1-12-88

Depth (Meters)	Depth (Feet)	Sample Type	% Recovery	Blows/Foot	Sample No.	Symbol	Symbols	Description
0	0							SAND, FINE, MEDIUM DENSE, DARK GRAY
1							SP	
	5	SS	67	48	1			GROUNDWATER ENCOUNTERED AT 3.5 FEET
2								
	10	SS	11	10	2		OL	SILT, SANDY, ORGANIC RICH, WET, MEDIUM STIFF, BLACK FUEL ODOR IN SAMPLE
3								
	15	SS	44	0	3			SAND, FINE, WET, VERY LOOSE, DARK GRAYISH-BROWN
4								
	20	SS	33	22	4		SP	GRADING DARK REDDISH-BROWN
5								
	25	SS	0	2	5			
6								
	30	SS	50	8	6		OL	SILT, SANDY, ORGANIC RICH, WET, MEDIUM STIFF, LOW PLASTICITY, VERY DARK GRAY
7								
	35	SS	44	3	7		SW	SAND, FINE TO COARSE, WET, VERY LOOSE, DUSKY RED
8								
	40						GP	GRAVEL, SANDY, WET, MEDIUM DENSE, ROUNDED GRAVELS, DARK REDDISH-BROWN

LOG OF BORING

Dames & Moore

BORING DM-11, Cont'd.

Depth (Meters)	Depth (Feet)	Sample Type	% Recovery	Blows/Foot	Sample No.	Symbol	Symbols	Description
	40	SS	39	28	8		<div>GP</div>	
13	45	AC	-	-	9			

BORING COMPLETED AT A DEPTH OF 45.0 FEET

LOG OF BORING

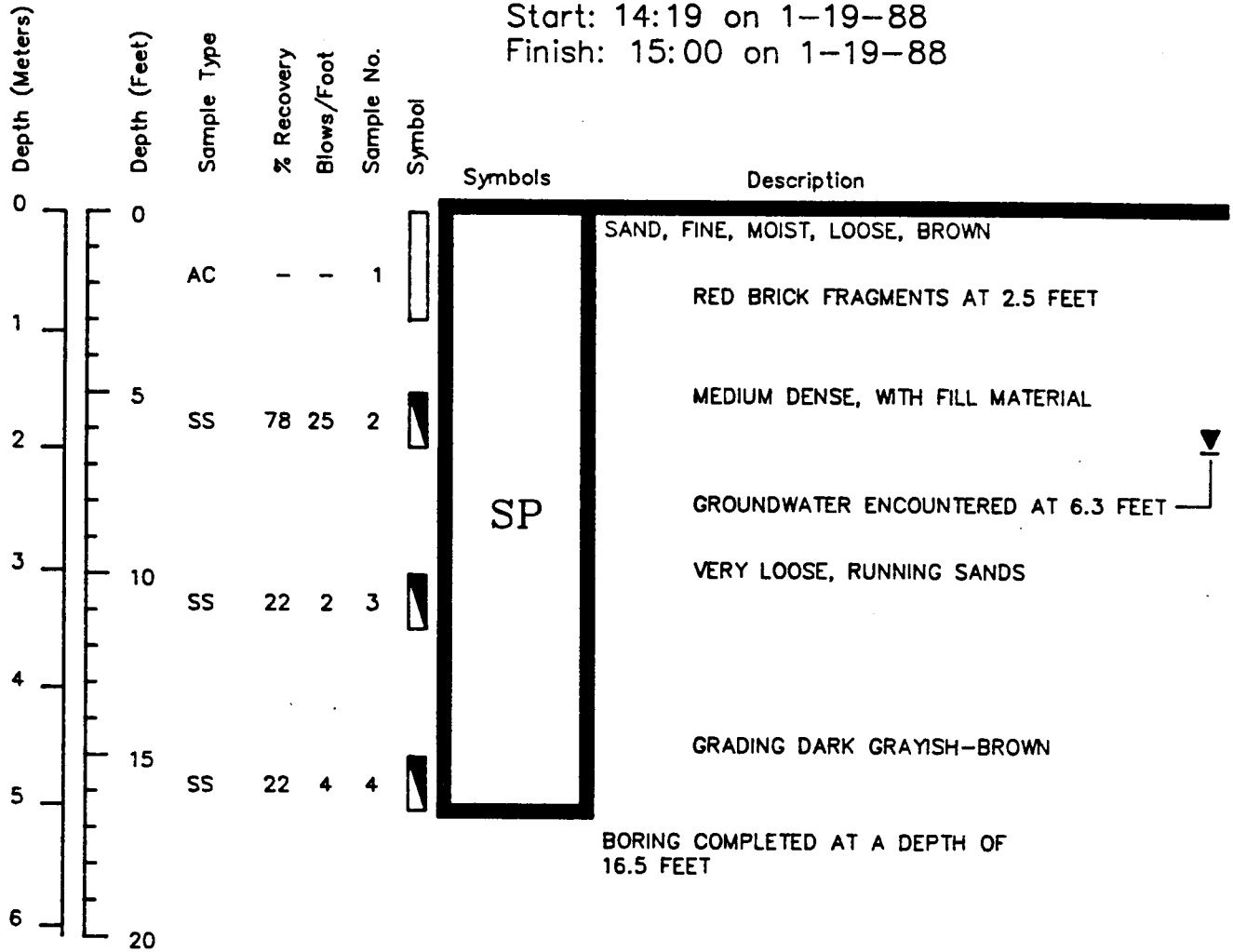
BORING DM-12

Surface Elevation: 15.51 Feet, MSL

Location: MOTBY, New Jersey

Start: 14:19 on 1-19-88

Finish: 15:00 on 1-19-88



LOG OF BORING

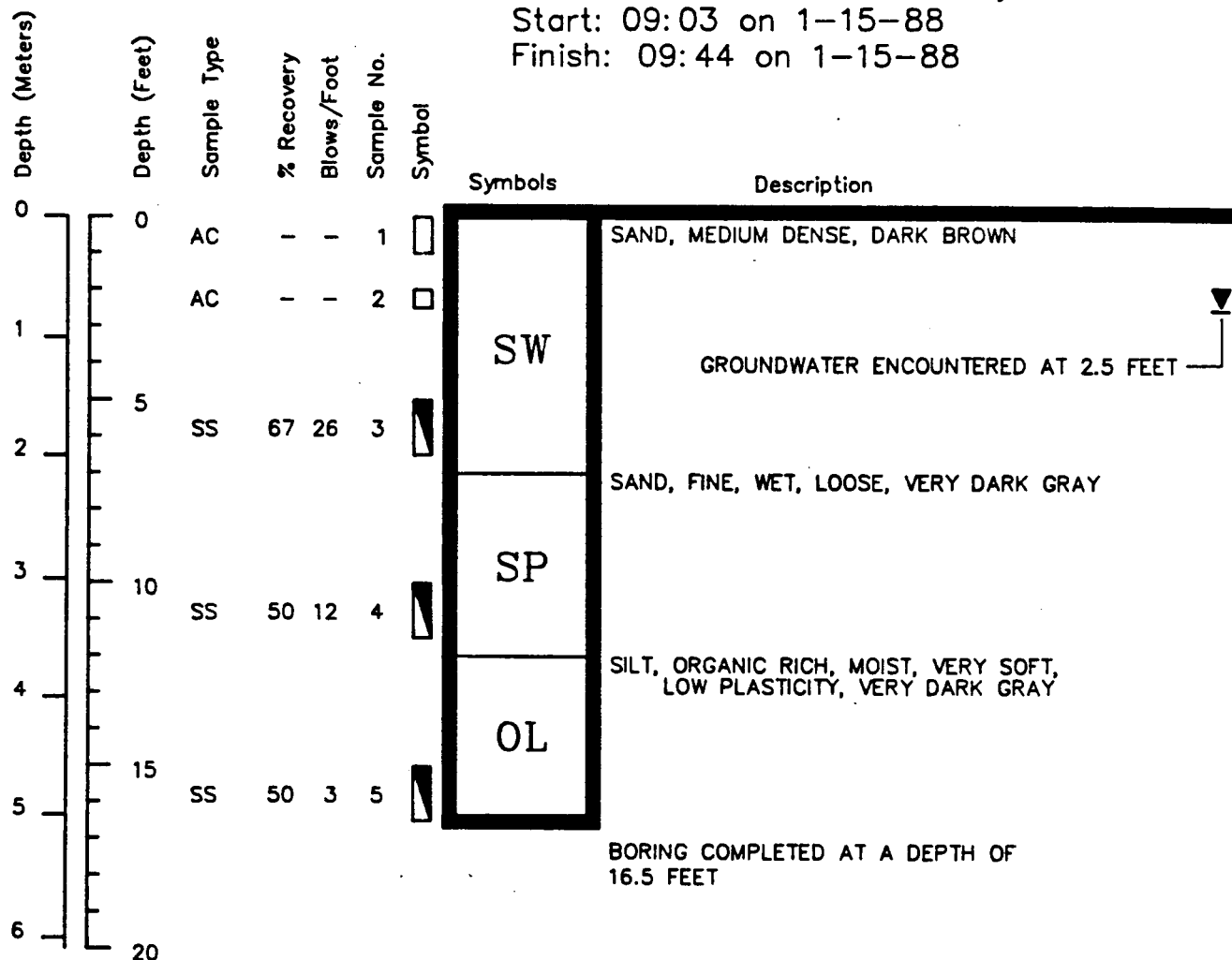
BORING DM-13

Surface Elevation: 11.26 Feet, MSL

Location: MOTBY, New Jersey

Start: 09:03 on 1-15-88

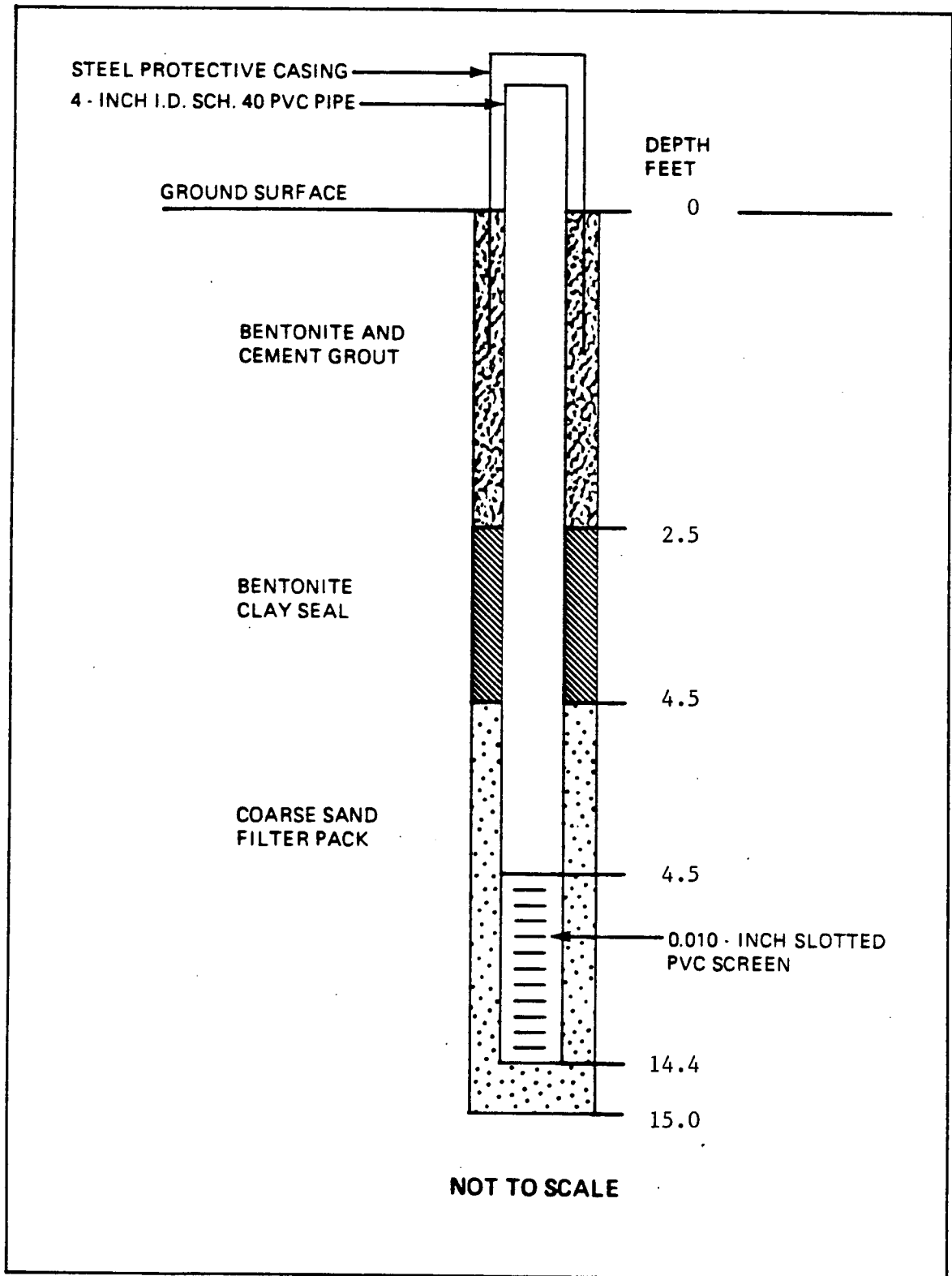
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LOG OF BORING

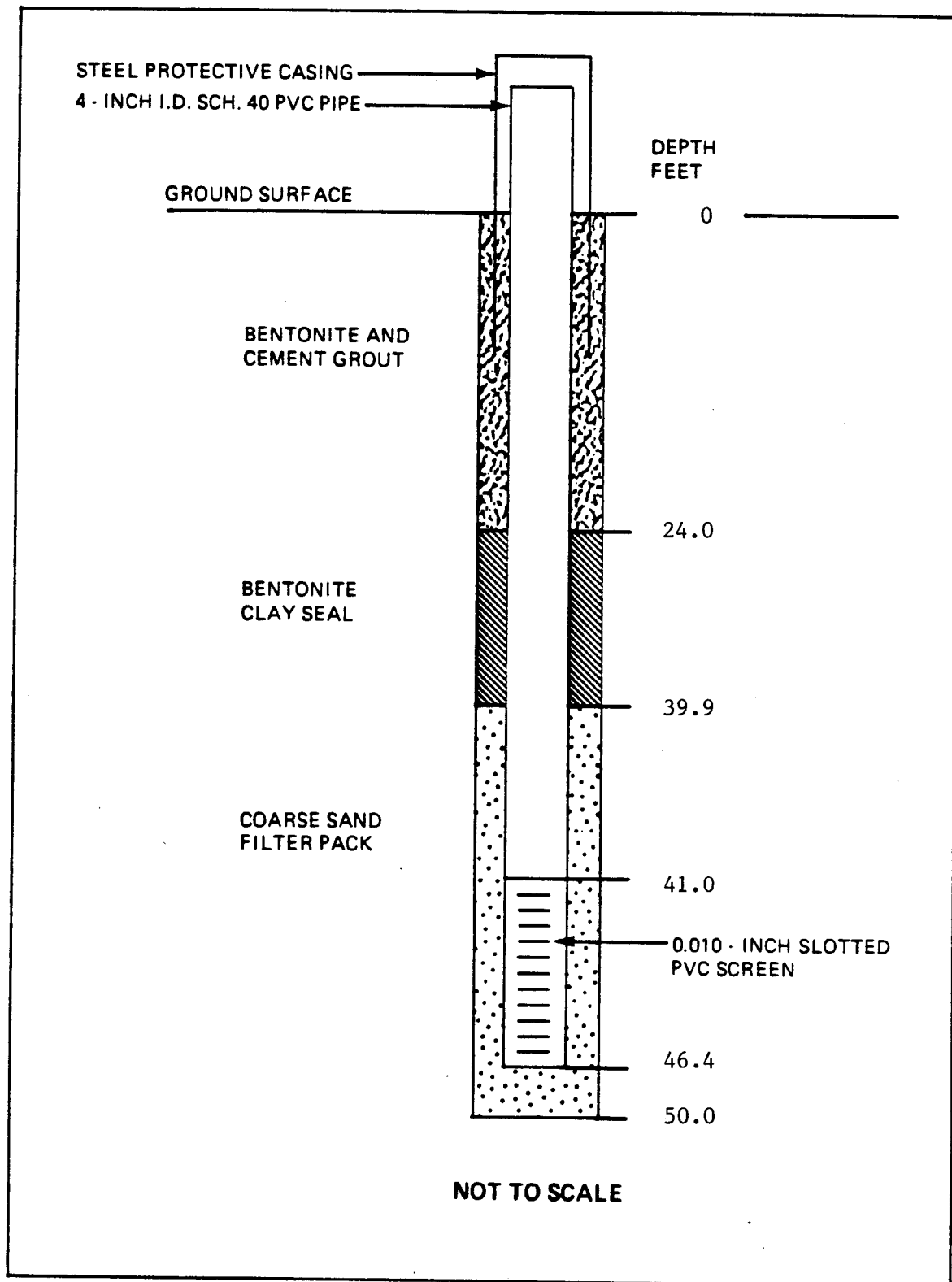
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-1
Completion Date: 12/18/87
Surface Elevation: 11.76 feet
Top of PVC Elevation: 13.92 ft



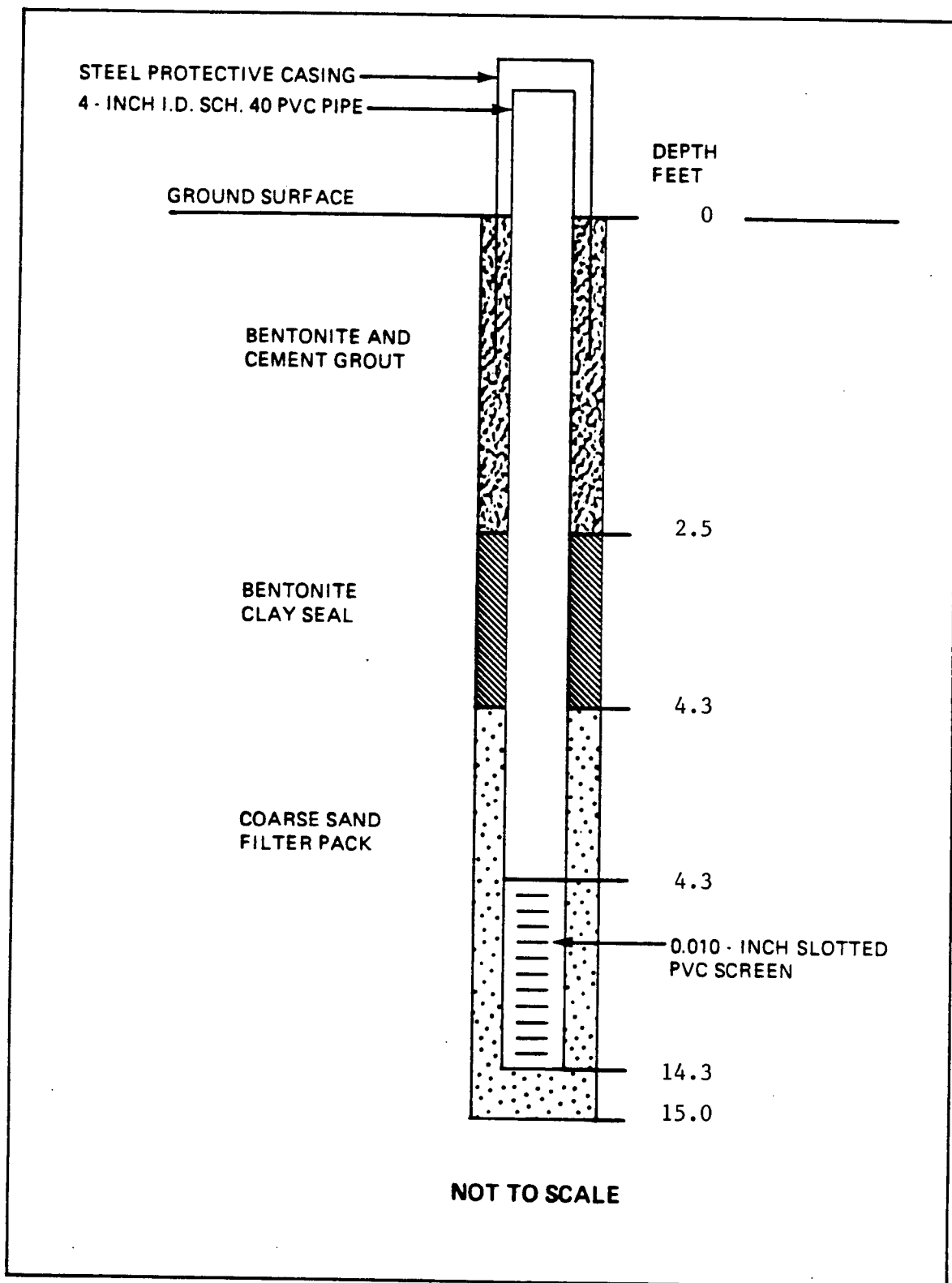
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-2
Completion Date: 12/17/87
Surface Elevation: 11.74 feet
Top of PVC Elevation: 14.88 feet



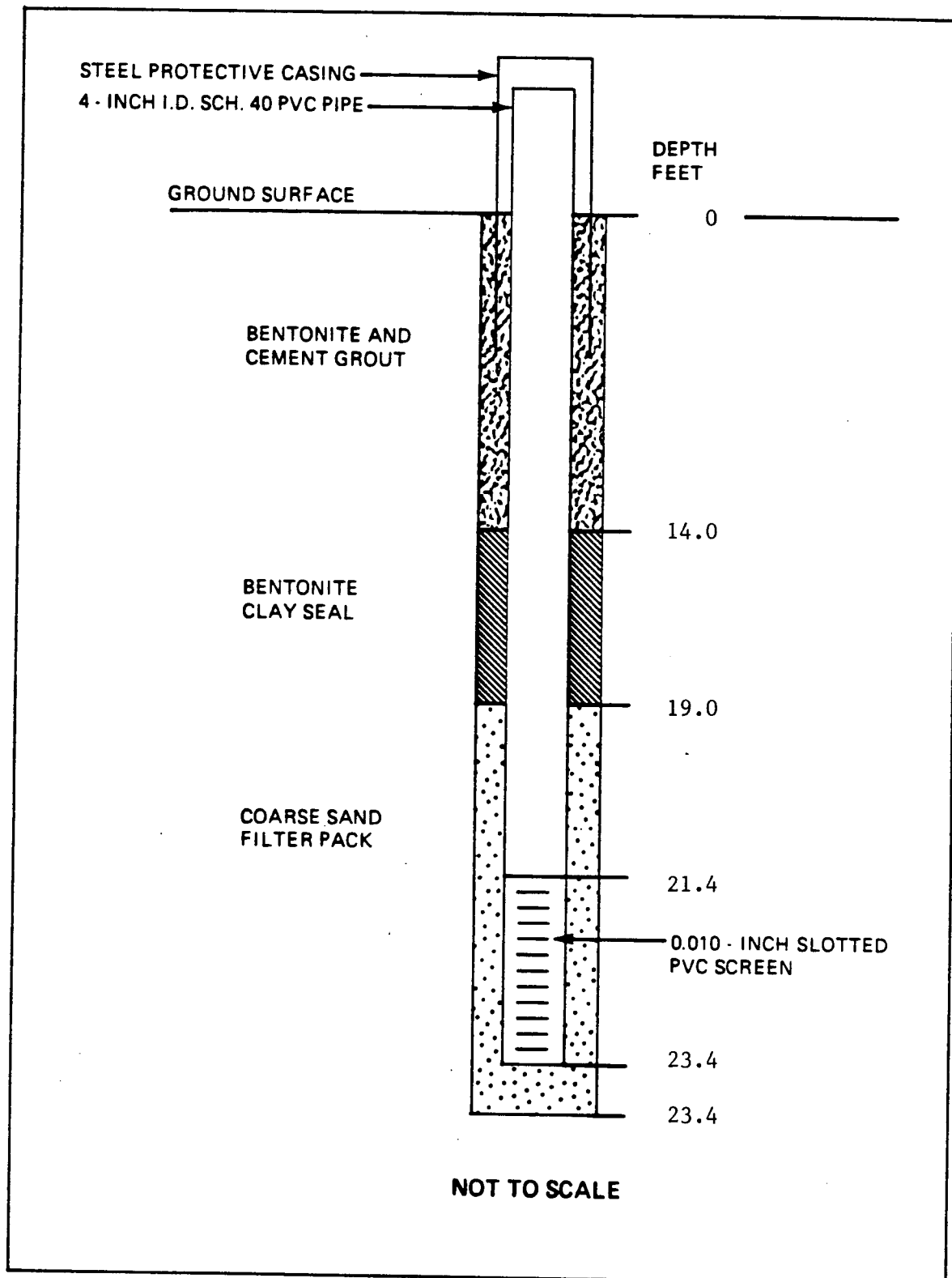
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-3
Completion Date: 1/20/88
Surface Elevation: 20.98 feet
Top of PVC Elevation: 23.35 feet



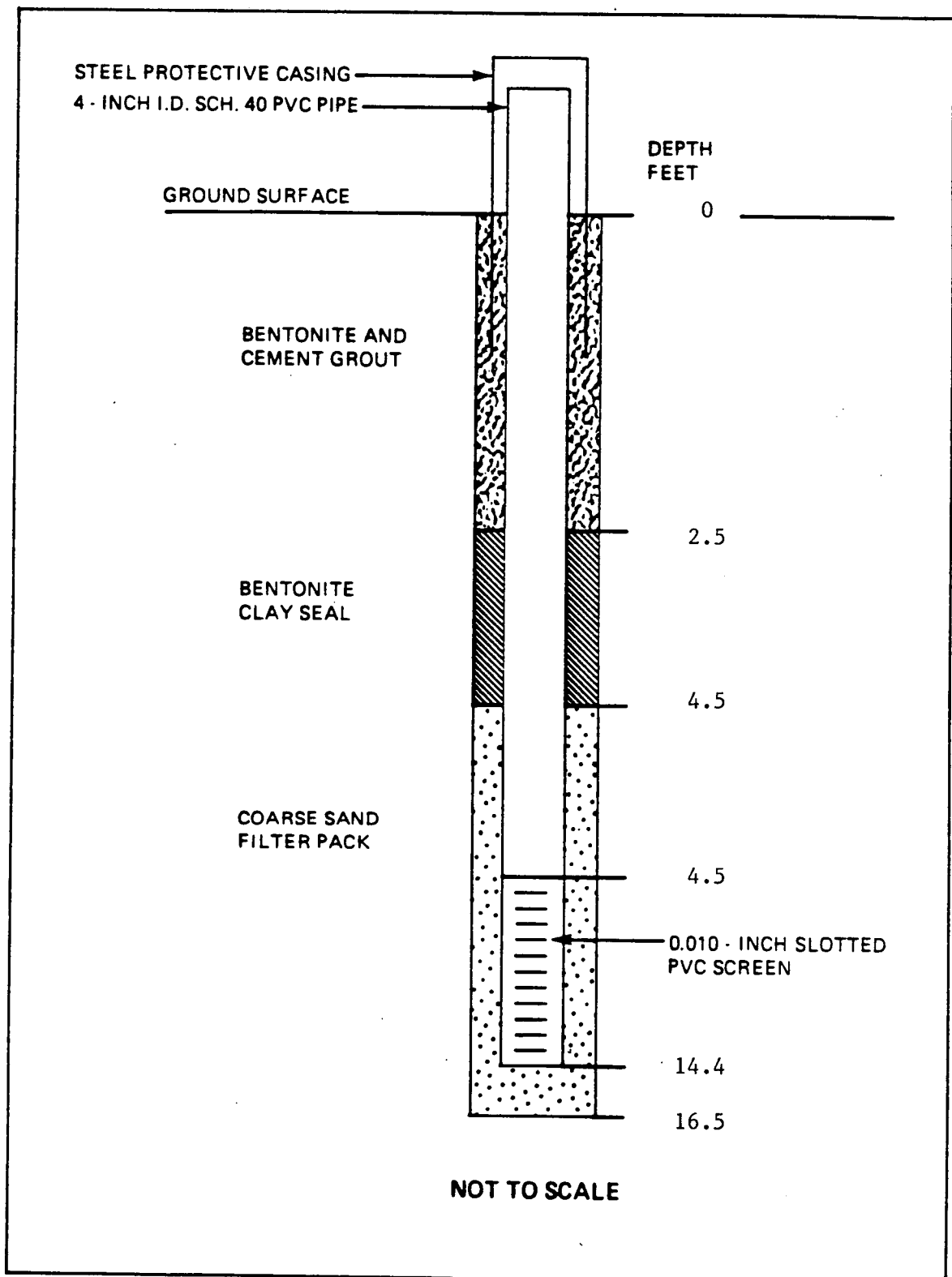
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-4C
Completion Date: 1/21/88
Surface Elevation: 11.11 feet
Top of PVC Elevation: 13.39 feet



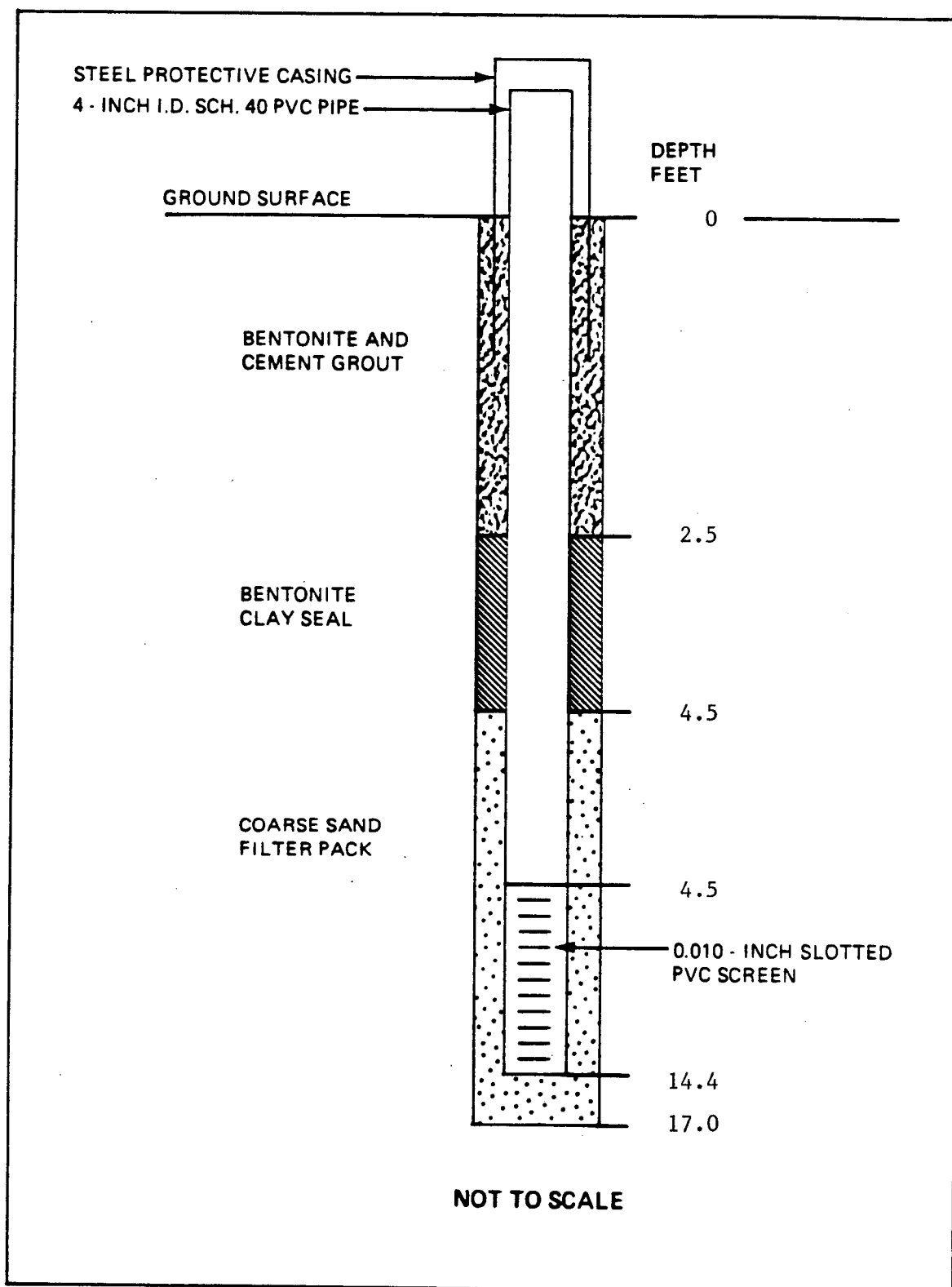
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-5
Completion Date: 12/22/87
Surface Elevation: 11.92 feet
Top of PVC Elevation: 14.05 ft



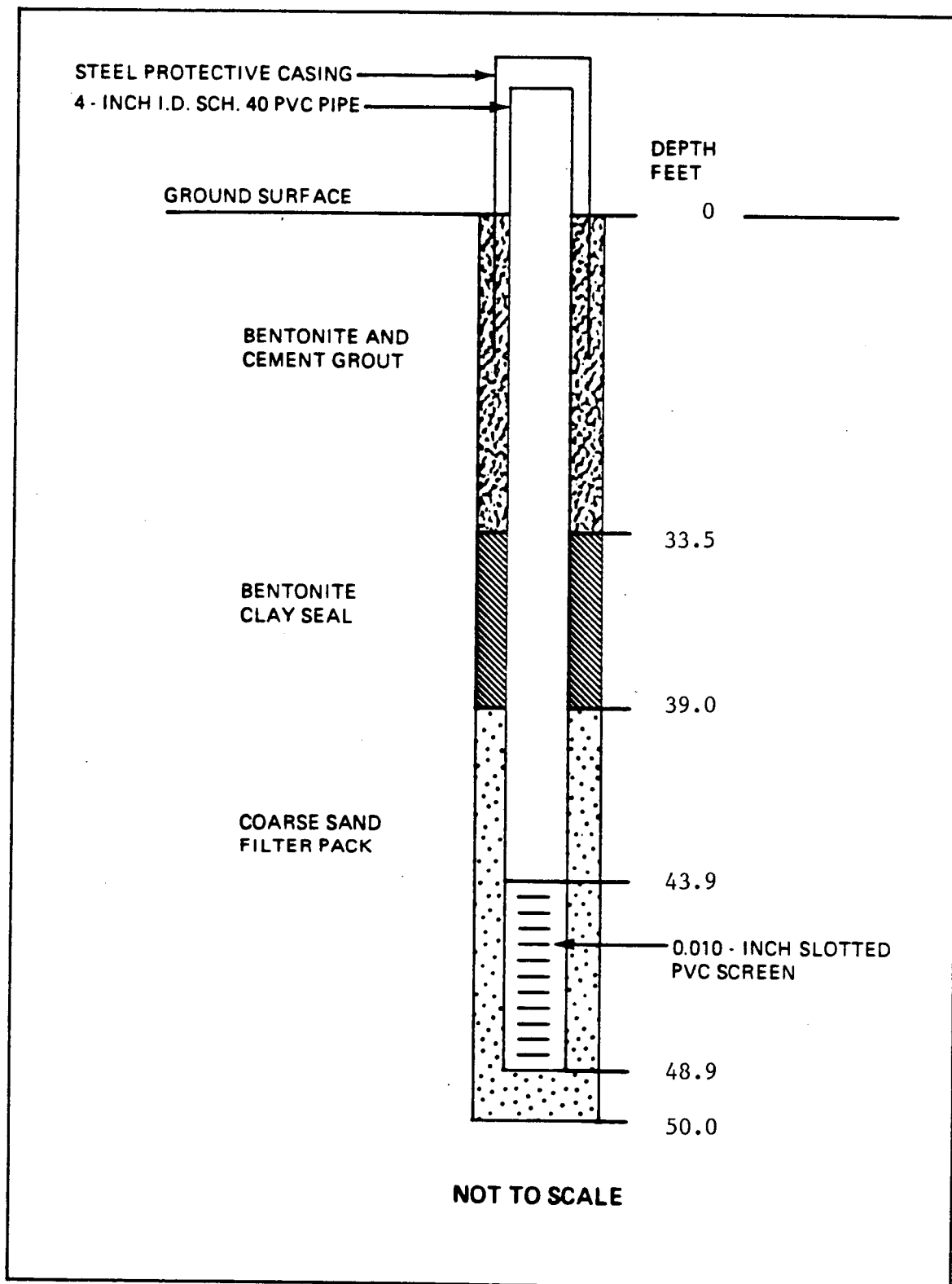
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-6
Completion Date: 12/22/87
Surface Elevation: 11.91 feet
Top of PVC Elevation: 14.30 ft



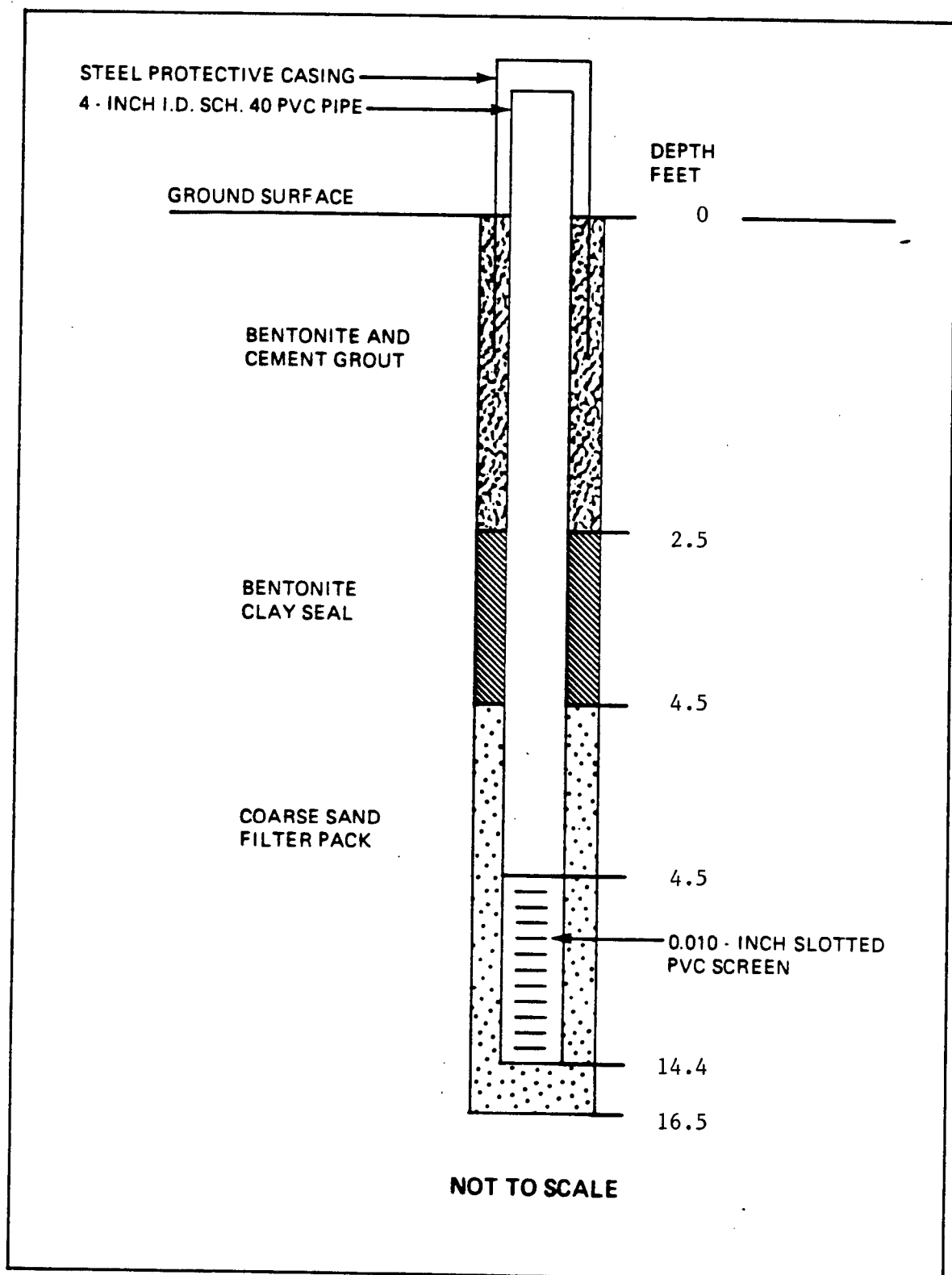
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-7
Completion Date: 1/6/88
Surface Elevation: 13.29 feet
Top of PVC Elevation: 15.75 ft



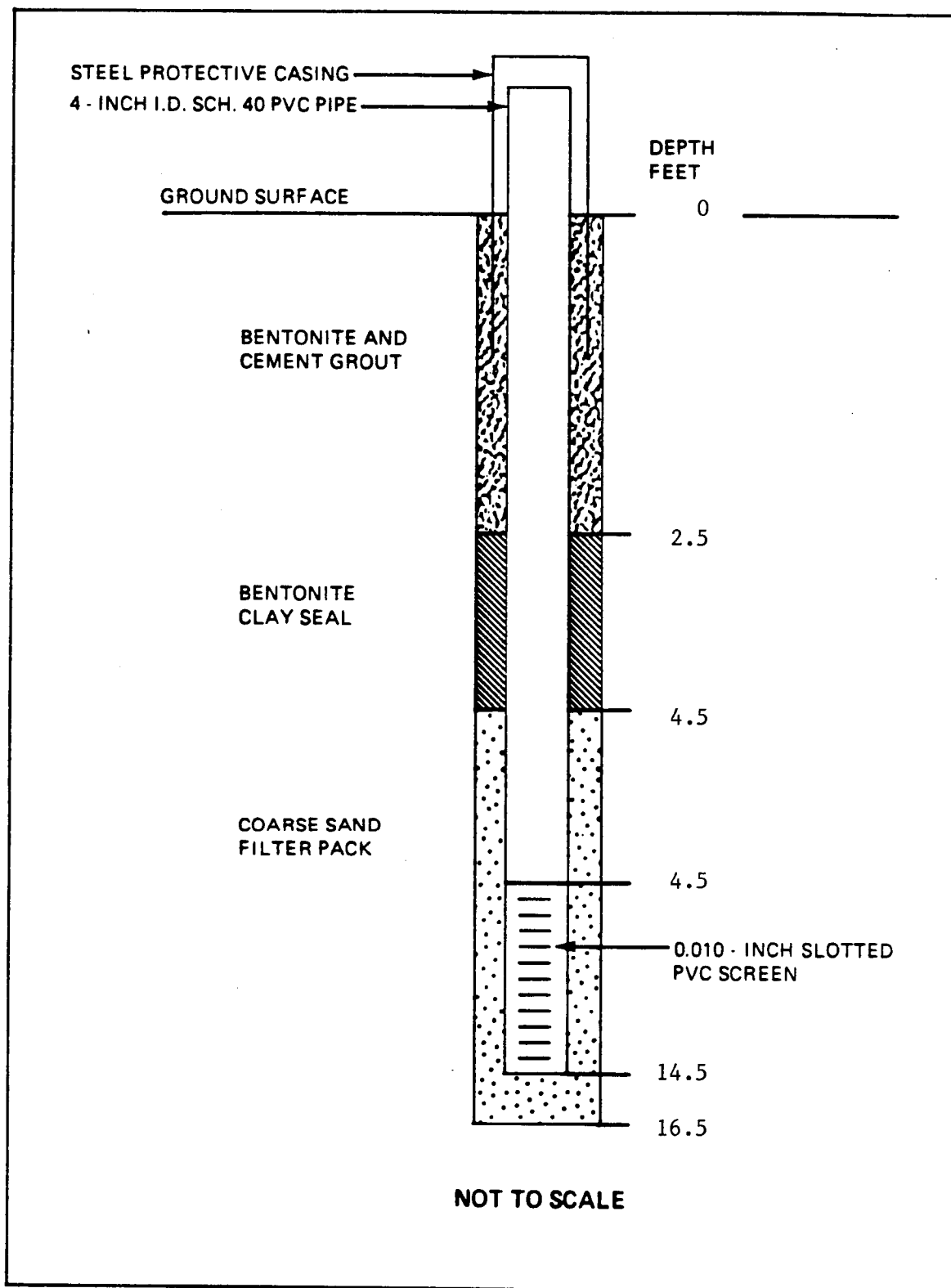
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-8
Completion Date: 12/21/87
Surface Elevation: 11.21 feet
Top of PVC Elevation: 13.48 ft



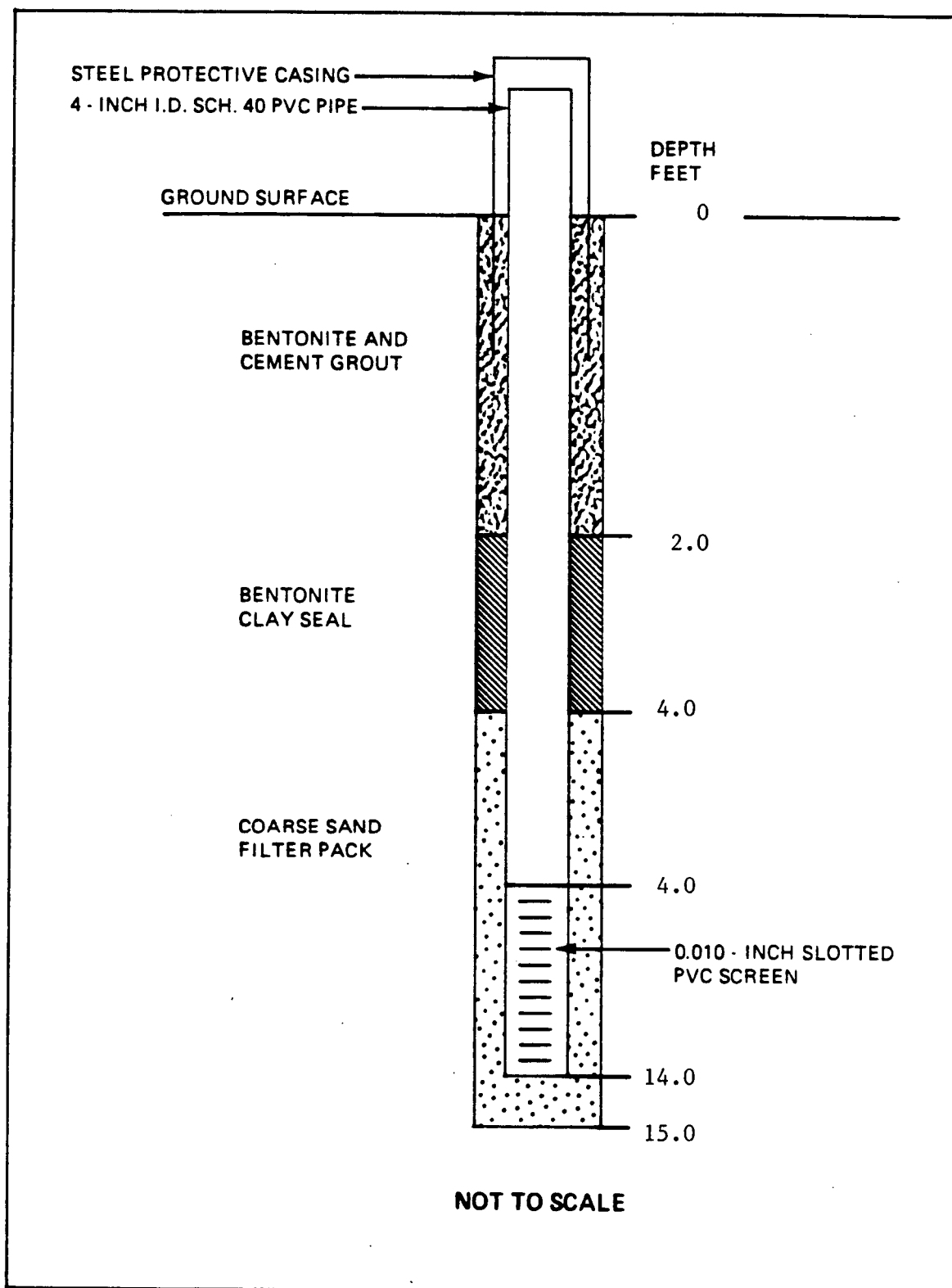
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-9
Completion Date: 1/11/88
Surface Elevation: 11.57 feet
Top of PVC Elevation: 13.79 ft



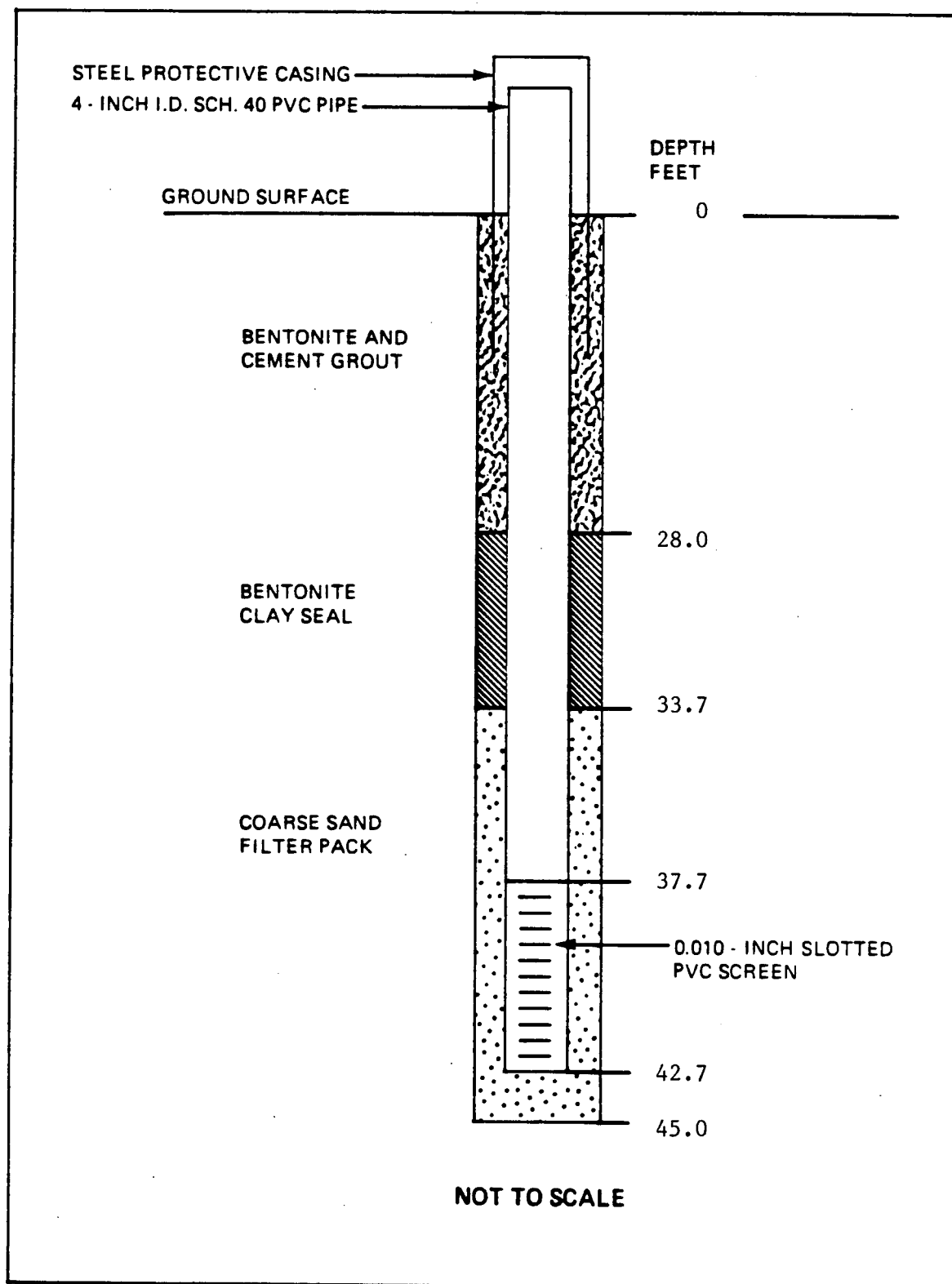
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-10
Completion Date: 1/14/88
Surface Elevation: 10.48 feet
Top of PVC Elevation: 13.48 ft



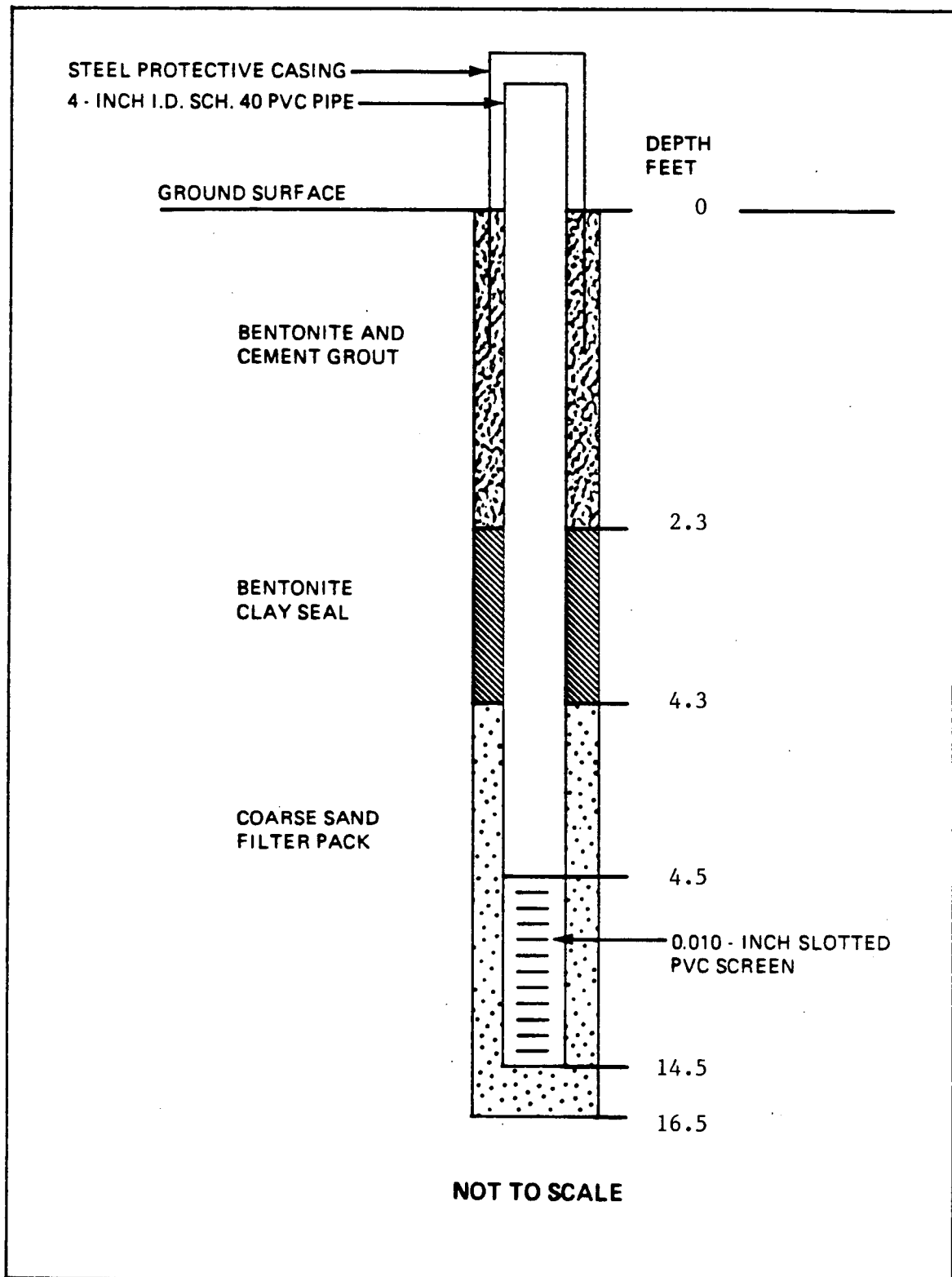
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-11
Completion Date: 1/12/88
Surface Elevation: 10.56 feet
Top of PVC Elevation: 13.41 ft



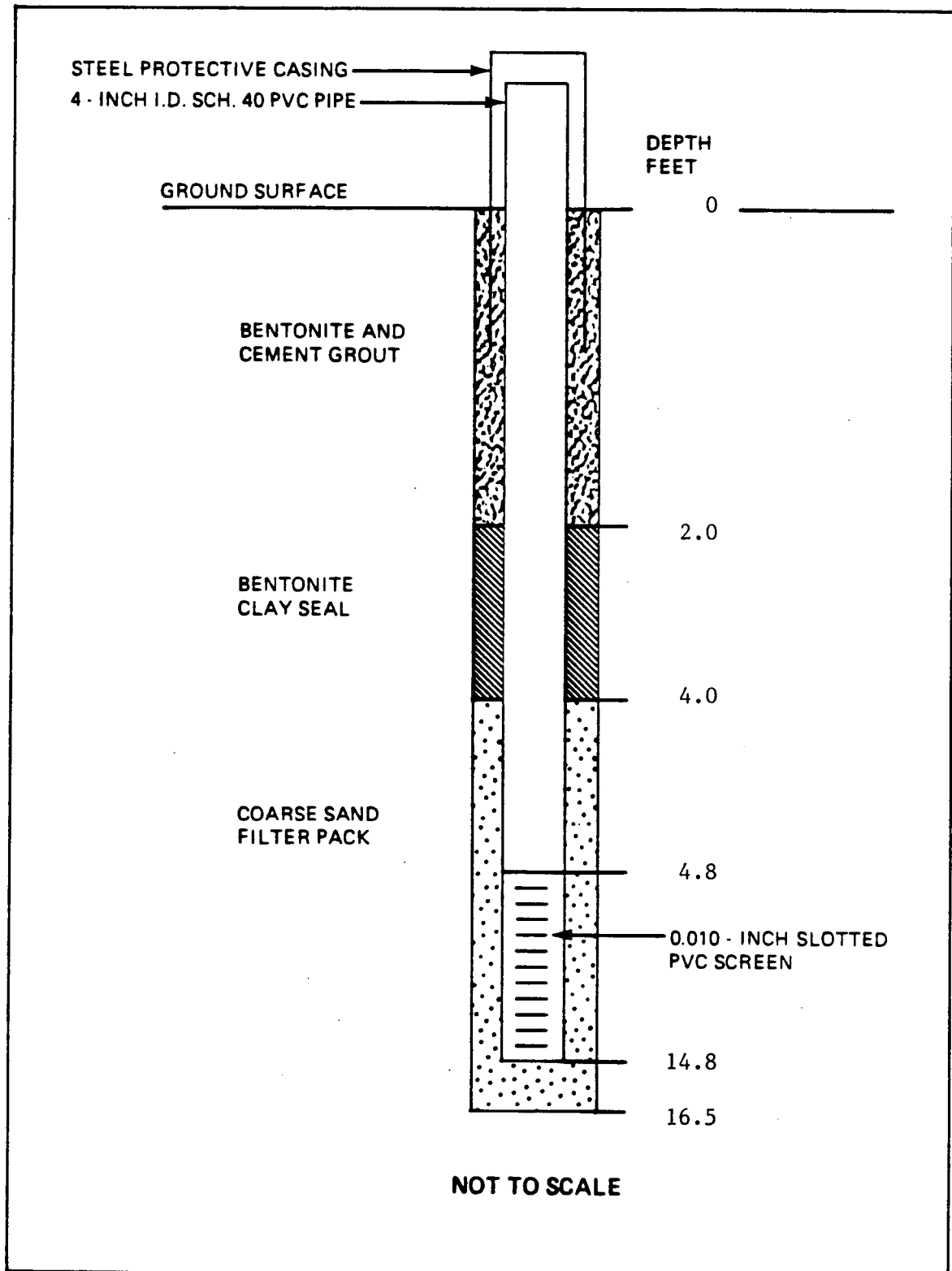
MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-12
Completion Date: 1/19/88
Surface Elevation: 15.51 feet
Top of PVC Elevation: 17.54 ft



MONITORING WELL INSTALLATION
DIAGRAM FOR
REMEDIAL INVESTIGATION
MILITARY OCEAN TERMINAL, BAYONNE

Location: DM-13
Completion Date: 1/15/88
Surface Elevation: 11.26 feet
Top of PVC Elevation: 13.38 ft

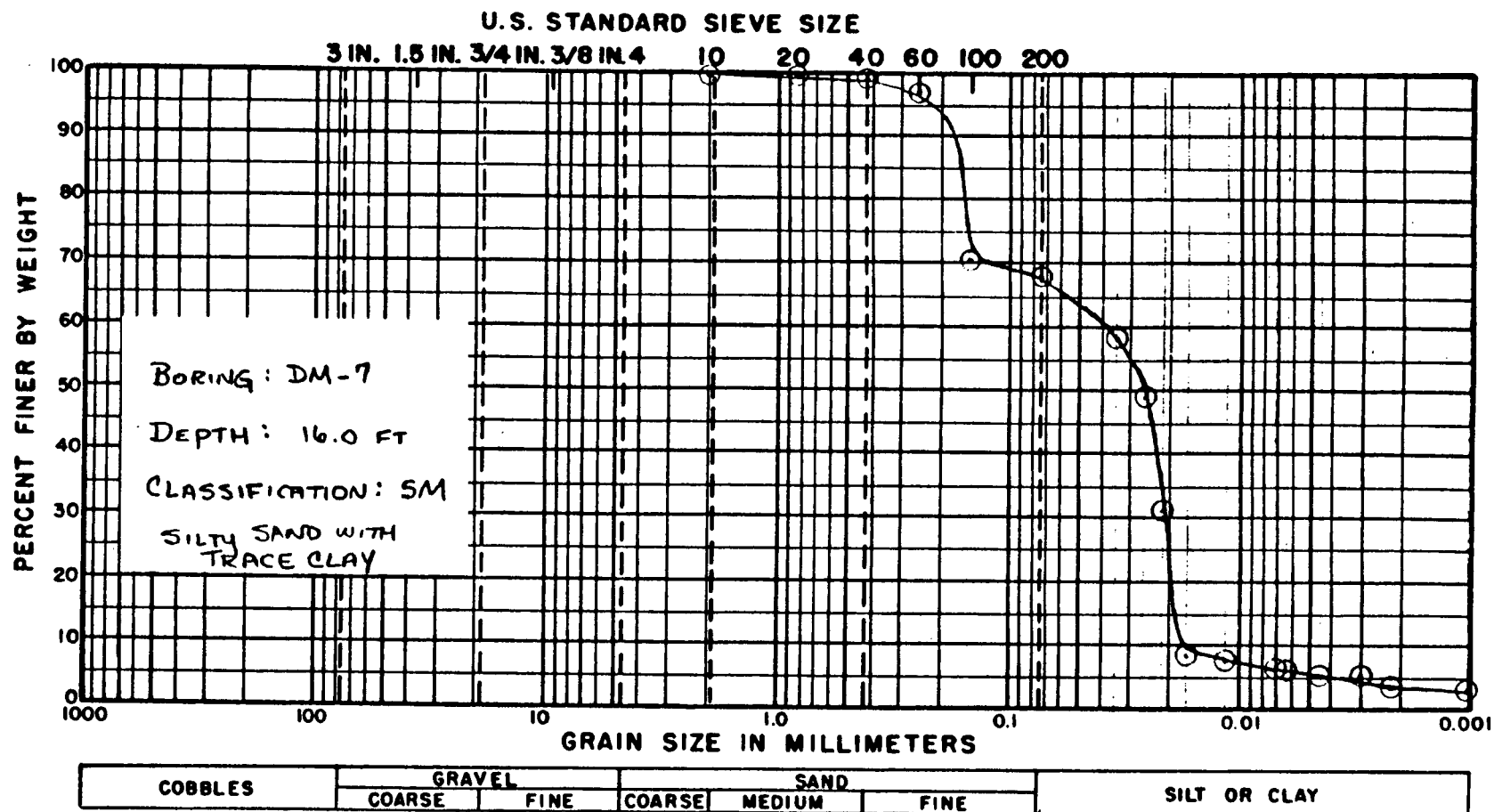


APPENDIX B
Physical Soil Testing Results

TABLE B-1

<u>Data/Results</u>	<u>Boring No. DM-7</u>
Sample No.	3
Depth (ft)	15 - 16.5
Soil Type	SM
Soil Permeability (cm/sec)	1.79×10^{-4}
Density (wet - lbs/ft ³)	156.9
Density (dry - lbs/ft ³)	118.7
Moisture Content (% dry wt.)	32.2
% Passing No. 200 Sieve	67.7

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**GRADATION CURVE**

APPENDIX C
Chemical Analytical Results

- I. Groundwater Samples**
- II. Surface Water Samples**
- III. Sediment Samples**
- IV. Soil Samples**
- V. Tank Samples**

I. Groundwater Samples

RUN DATE: 22 MAR 89

PAGE NO: 1

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-1

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND		CONCENTRATION	UNITS
11.7	.0	.00	9.2	08/02/88	00	OILGR	ND	5000.00000000	UGL
			9.2	08/03/88	SB	HG		.70199999	UGL
			9.2		SD	AS		19.50000000	UGL
			9.2			PB		10.69999993	UGL
			9.2		SS	AG	LT	5.56000000	UGL
			9.2			BA		137.99999809	UGL
			9.2			CD		5.69000000	UGL
			9.2			CR		4.80000001	UGL
			9.2			CU	LT	6.19999999	UGL
			9.2			FE		45000.00000000	UGL
			9.2			MN		1459.99998474	UGL
			9.2			SE	LT	98.59999943	UGL
			9.2			ZN		44.39999962	UGL
			9.2		TT	SO4	LT	222.99999809	UGL
			9.2		UM	ACET	ND	10.00000000	UGL
			9.2			BDRCLM	ND	5.00000000	UGL
			9.2			CCL4	LT	1.00000000	UGL
			9.2			CHBR3	LT	3.69999999	UGL
			9.2			CHCL3	LT	1.00000000	UGL
			9.2			CH2CL2	LT	23.00000000	UGL
			9.2			CH3BR	ND	10.00000000	UGL
			9.2			CH3CL	LT	1.80000000	UGL
			9.2			CLC6H5	LT	1.20000000	UGL
			9.2			CS2	ND	5.00000000	UGL
			9.2			C13DCP	LT	1.80000000	UGL
			9.2			C2AVE	ND	10.00000000	UGL
			9.2			C2H3CL	LT	12.99999988	UGL
			9.2			C2H5CL	LT	6.89999998	UGL
			9.2			C6H6	LT	1.70000000	UGL
			9.2			DBRCLM	LT	1.80000000	UGL
			9.2			ETC6H5	LT	1.40000001	UGL
			9.2			MEC6H5	LT	1.80000000	UGL
			9.2			MEK	ND	10.00000000	UGL
			9.2			MIBK	ND	10.00000000	UGL
			9.2			MNBK	ND	10.00000000	UGL
			9.2			STYR	ND	5.00000000	UGL
			9.2			TCLEA	LT	7.10000002	UGL
			9.2			TCLEE	LT	2.30000001	UGL
			9.2			TRCLE	LT	1.00000000	UGL
			9.2			T13DCP	LT	1.59999999	UGL
			9.2			UNK293		41.99999952	UGL
			9.2			XYLEN	ND	5.00000000	UGL
			9.2			11DCE	LT	6.80000001	UGL
			9.2			11DCLE	LT	2.69999999	UGL
			9.2			111TCE	LT	1.00000000	UGL
			9.2			112TCE	LT	1.70000000	UGL
			9.2			12DCE	LT	2.19999999	UGL
			9.2			12DCLE	LT	1.00000000	UGL

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9.2			12DCLP	LT	3.19999999	UGL
9.2	08/05/88	UM	ABHC	ND	10.00000000	UGL
9.2			AENSLF	ND	10.00000000	UGL
9.2			ALDRN	LT	6.30000001	UGL
9.2			ANAPNE		7.63999999	UGL
9.2			ANAPYL	LT	3.69999999	UGL
9.2			ANTHRC	LT	1.09999999	UGL
9.2			BAANTR	LT	.82999999	UGL
9.2			BAPYR	LT	4.50000000	UGL
9.2			BBFANT	LT	2.40000001	UGL
9.2			BBHC	LT	3.19999999	UGL
9.2			BBZP	ND	10.00000000	UGL
9.2			BENSLF	ND	10.00000000	UGL
9.2			BENZOA	ND	50.00000000	UGL
9.2			BGHIPY	LT	38.00000000	UGL
9.2			BKFANT	LT	2.90000001	UGL
9.2			BZALC	ND	.10000000	UGL
9.2			B2CEXM	ND	10.00000000	UGL
9.2			B2CIPE	ND	10.00000000	UGL
9.2			B2CLEE	LT	1.59999999	UGL
9.2			B2EHP	LT	34.00000000	UGL
9.2			CHRY	LT	1.00000000	UGL
9.2			CLDAN	LT	12.00000000	UGL
9.2			CL6BZ	LT	2.80000001	UGL
9.2			CL6CP	ND	10.00000000	UGL
9.2			CL6ET	LT	8.20000005	UGL
9.2			DBAHA	LT	4.89999998	UGL
9.2			DBHC	LT	95.00000000	UGL
9.2			DBZFUR	ND	10.00000000	UGL
9.2			DEP	ND	10.00000000	UGL
9.2			DLDRN	LT	3.50000000	UGL
9.2			DMP	ND	10.00000000	UGL
9.2			DNBP	ND	10.00000000	UGL
9.2			DNOP	LT	17.99999976	UGL
9.2			ENDRN	LT	51.00000000	UGL
9.2			ENDRNK	ND	10.00000000	UGL
9.2			ESFSO4	ND	10.00000000	UGL
9.2			FANT	LT	1.20000000	UGL
9.2			FLRENE		3.44000000	UGL
9.2			HCBP	LT	6.00000000	UGL
9.2			HPCL	LT	5.30000001	UGL
9.2			HPCLE	LT	6.69999999	UGL
9.2			ICDPYR	LT	86.00000000	UGL
9.2			ISOPHR	ND	.10000000	UGL
9.2			LIN	LT	15.00000000	UGL
9.2			MEXCLR	ND	50.00000000	UGL
9.2			NAP	LT	4.00000000	UGL
9.2			NB	ND	10.00000000	UGL
9.2			NNDNPA	LT	6.69999999	UGL
9.2			NNDPA	ND	6.69999999	UGL
9.2			PCBO16	ND	50.00000000	UGL
9.2			PCB221	ND	50.00000000	UGL
9.2			PCB232	ND	50.00000000	UGL
9.2			PCB242	ND	50.00000000	UGL
9.2			PCB248	ND	50.00000000	UGL
9.2			PCB254	ND	50.00000000	UGL
9.2			PCB260	ND	50.00000000	UGL

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9.2	PCP	ND	50.00000000	UGL
9.2	PHANTR		2.63000000	UGL
9.2	PHENOL	ND	10.00000000	UGL
9.2	PPDD	LT	6.00000000	UGL
9.2	PPDE	LT	12.00000000	UGL
9.2	PPDDT	LT	4.69999999	UGL
9.2	PYR	LT	12.00000000	UGL
9.2	TXPHEN	ND	50.00000000	UGL
9.2	UNK549		6.89999998	UGL
9.2	UNK568		4.25000000	UGL
9.2	UNK596		150.00000000	UGL
9.2	12DCLB	LT	5.19999999	UGL
9.2	124TCB	LT	4.60000002	UGL
9.2	13DCLB	LT	5.50000000	UGL
9.2	14DCLB	LT	6.00000000	UGL
9.2	2CLP	ND	10.00000000	UGL
9.2	2CNAP	LT	1.70000000	UGL
9.2	2MNAP		33.09999990	UGL
9.2	2MP	ND	10.00000000	UGL
9.2	2NANIL	ND	50.00000000	UGL
9.2	2NP	ND	50.00000000	UGL
9.2	24DCLP	ND	10.00000000	UGL
9.2	24DMPN	ND	10.00000000	UGL
9.2	24DNP	ND	50.00000000	UGL
9.2	24DNT	LT	5.39999998	UGL
9.2	245TCP	ND	50.00000000	UGL
9.2	246TCP	ND	10.00000000	UGL
9.2	26DNT	LT	5.10000002	UGL
9.2	3NANIL	ND	50.00000000	UGL
9.2	33DCBD	ND	20.00000000	UGL
9.2	4BRPPE	ND	10.00000000	UGL
9.2	4CANIL	ND	10.00000000	UGL
9.2	4CLPPE	ND	10.00000000	UGL
9.2	4CL3C	ND	10.00000000	UGL
9.2	4MP	ND	10.00000000	UGL
9.2	4NANIL	ND	50.00000000	UGL
9.2	4NP	ND	50.00000000	UGL
9.2	46DN2C	ND	50.00000000	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-2

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
11.7	.0	.00	44.3	08/03/88	SB	HG	.74999999	UGL
			44.3		SD	AS	9.50999999	UGL
			44.3			PB	4.49000001	UGL
			44.3		SS	AG	5.56000000	UGL
			44.3			BA	456.99999619	UGL
			44.3			CD	4.08999997	UGL
			44.3			CR	5.00000000	UGL
			44.3			CU	6.19999999	UGL
			44.3			FE	159.00000000	UGL
			44.3			MN	3.03999999	UGL
			44.3			SE	98.59999943	UGL
			44.3			ZN	48.59999990	UGL
			44.3		TT	SO4	5899.99993896	UGL
			44.3		UM	ACET	120.00000000	UGL
			44.3			BDRCLM	5.00000000	UGL
			44.3			CCL4	1.00000000	UGL
			44.3			CHBR3	3.69999999	UGL
			44.3			CHCL3	1.00000000	UGL
			44.3			CH2CL2	39.09999990	UGL
			44.3			CH3BR	10.00000000	UGL
			44.3			CH3CL	1.80000000	UGL
			44.3			CLC6H5	1.20000000	UGL
			44.3			CS2	430.00000000	UGL
			44.3			C13DCP	1.80000000	UGL
			44.3			C2AVE	10.00000000	UGL
			44.3			C2H3CL	12.99999988	UGL
			44.3			C2H5CL	6.89999998	UGL
			44.3			C6H6	1.70000000	UGL
			44.3			DBRCLM	1.80000000	UGL
			44.3			ETC6H5	1.40000001	UGL
			44.3			MEC6H5	1.80000000	UGL
			44.3			MEK	10.00000000	UGL
			44.3			MIBK	10.00000000	UGL
			44.3			MNBK	10.00000000	UGL
			44.3			STYR	5.00000000	UGL
			44.3			TCLEA	7.10000002	UGL
			44.3			TCLEE	2.30000001	UGL
			44.3			TRCLE	1.00000000	UGL
			44.3			T13DCP	1.59999999	UGL
			44.3			UNK292	30.00000000	UGL
			44.3			XYLEN	5.00000000	UGL
			44.3			11DCE	6.80000001	UGL
			44.3			11DCL	2.69999999	UGL
			44.3			111TCE	1.00000000	UGL
			44.3			112TCE	1.70000000	UGL
			44.3			12DCE	2.19999999	UGL
			44.3			12DCL	1.00000000	UGL
			44.3			12DCLP	3.19999999	UGL

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44.3	UM	ABHC	ND	10.00000000	UGL
44.3		AENSLF	ND	10.00000000	UGL
44.3		ALDRN	LT	6.30000001	UGL
44.3		ANAPNE	LT	1.30000000	UGL
44.3		ANAPYL	LT	3.69999999	UGL
44.3		ANTHRC	LT	1.09999999	UGL
44.3		BAANTR	LT	.82999999	UGL
44.3		BAPYR	LT	4.50000000	UGL
44.3		BBFANT	LT	2.40000001	UGL
44.3		BBHC	LT	3.19999999	UGL
44.3		BBZP	ND	10.00000000	UGL
44.3		BENSLF	ND	10.00000000	UGL
44.3		BENZOA	ND	50.00000000	UGL
44.3		BGHIPI	LT	38.00000000	UGL
44.3		BKFANT	LT	2.90000001	UGL
44.3		BZALC	ND	.10000000	UGL
44.3		B2CEXM	ND	10.00000000	UGL
44.3		B2CIPE	ND	10.00000000	UGL
44.3		B2CLEE	LT	1.59999999	UGL
44.3		B2EHP	LT	34.00000000	UGL
44.3		CHRY	LT	1.00000000	UGL
44.3		CLDAN	LT	12.00000000	UGL
44.3		CL6BZ	LT	2.80000001	UGL
44.3		CL6CP	ND	10.00000000	UGL
44.3		CL6ET	LT	8.20000005	UGL
44.3		DBAHA	LT	4.89999998	UGL
44.3		DBHC	LT	95.00000000	UGL
44.3		DBZFUR	ND	10.00000000	UGL
44.3		DEP	ND	10.00000000	UGL
44.3		DLDRN	LT	3.50000000	UGL
44.3		DMP	ND	10.00000000	UGL
44.3		DNBP	ND	10.00000000	UGL
44.3		DNOP	LT	17.99999976	UGL
44.3		ENDRN	LT	51.00000000	UGL
44.3		ENDRNK	ND	10.00000000	UGL
44.3		ESFSD4	ND	10.00000000	UGL
44.3		FANT	LT	1.20000000	UGL
44.3		FLRENE	ND	10.00000000	UGL
44.3		HCBG	LT	6.00000000	UGL
44.3		HPLC	LT	5.30000001	UGL
44.3		HPLCE	LT	6.69999999	UGL
44.3		ICDPYR	LT	86.00000000	UGL
44.3		ISOPHR	ND	.10000000	UGL
44.3		LIN	LT	15.00000000	UGL
44.3		MEXCLR	ND	50.00000000	UGL
44.3		NAP	LT	4.00000000	UGL
44.3		NB	ND	10.00000000	UGL
44.3		NNDNPA	LT	6.69999999	UGL
44.3		NNDPA	ND	6.69999999	UGL
44.3		PCB016	ND	50.00000000	UGL
44.3		PCB221	ND	50.00000000	UGL
44.3		PCB232	ND	50.00000000	UGL
44.3		PCB242	ND	50.00000000	UGL
44.3		PCB248	ND	50.00000000	UGL
44.3		PCB254	ND	50.00000000	UGL
44.3		PCB260	ND	50.00000000	UGL
44.3		PCP	ND	50.00000000	UGL

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44.3	PHANTR	LT	.849999999	UGL
44.3	PHENOL	ND	10.00000000	UGL
44.3	PPDDD	LT	6.00000000	UGL
44.3	PPDDE	LT	12.00000000	UGL
44.3	PPDDT	LT	4.69999999	UGL
44.3	PYR	LT	12.00000000	UGL
44.3	TXPHEN	ND	50.00000000	UGL
44.3	UNK528		8.38999999	UGL
44.3	UNK536		70.79999924	UGL
44.3	UNK537		35.89999962	UGL
44.3	UNK547		21.59999990	UGL
44.3	UNK548		33.00000000	UGL
44.3	UNK554		10.29999995	UGL
44.3	UNK561		82.69999981	UGL
44.3	UNK562		38.79999971	UGL
44.3	UNK568		110.99999905	UGL
44.3	UNK569		94.40000057	UGL
44.3	UNK570		49.29999971	UGL
44.3	UNK571		7.14999998	UGL
44.3	UNK574		41.49999952	UGL
44.3	UNK578		19.19999981	UGL
44.3	UNK598		17.79999995	UGL
44.3	UNK612		50.40000010	UGL
44.3	UNK613		290.00000000	UGL
44.3	UNK631		56.39999962	UGL
44.3	UNK667		581.00000000	UGL
44.3	UNK690		205.00000000	UGL
44.3	12DCLB	LT	5.19999999	UGL
44.3	124TCB	LT	4.60000002	UGL
44.3	13DCLB	LT	5.50000000	UGL
44.3	14DCLB	LT	6.00000000	UGL
44.3	2CLP	ND	10.00000000	UGL
44.3	2CNAP	LT	1.70000000	UGL
44.3	2MNAP	ND	10.00000000	UGL
44.3	2MP	ND	10.00000000	UGL
44.3	2NANIL	ND	50.00000000	UGL
44.3	2NP	ND	50.00000000	UGL
44.3	24DCLP	ND	10.00000000	UGL
44.3	24DMPN	ND	10.00000000	UGL
44.3	24DNP	ND	50.00000000	UGL
44.3	24DNT	LT	5.39999998	UGL
44.3	245TCP	ND	50.00000000	UGL
44.3	246TCP	ND	10.00000000	UGL
44.3	26DNT	LT	5.10000002	UGL
44.3	3NANIL	ND	50.00000000	UGL
44.3	33DCBD	ND	20.00000000	UGL
44.3	4BRPPE	ND	10.00000000	UGL
44.3	4CANIL	ND	10.00000000	UGL
44.3	4CLPPE	ND	10.00000000	UGL
44.3	4CL3C	ND	10.00000000	UGL
44.3	4MP	ND	10.00000000	UGL
44.3	4NANIL	ND	50.00000000	UGL
44.3	4NP	ND	50.00000000	UGL
44.3	46DN2C	ND	50.00000000	UGL
44.3	OILGR		20099.99975586	UGL

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RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-3

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
21.0	.0	.00	9.2	08/02/88	SB	HG	.66300000	UGL
			9.2		SD	AS	15.10000002	UGL
			9.2			PB	31.99999976	UGL
			9.2		SS	AG	5.56000000	UGL
			9.2			BA	334.99999619	UGL
			9.2			CD	4.08999997	UGL
			9.2			CR	12.99999988	UGL
			9.2			CU	135.99999809	UGL
			9.2			FE	19000.00000000	UGL
			9.2			MN	4899.99993896	UGL
			9.2			SE	98.59999943	UGL
			9.2			ZN	126.99999905	UGL
			9.2		TT	S04	58999.99951172	UGL
			9.2		UM	ACET	10.00000000	UGL
			9.2			BDRCLM	5.00000000	UGL
			9.2			CCL4	1.00000000	UGL
			9.2			CHBR3	3.69999999	UGL
			9.2			CHCL3	1.00000000	UGL
			9.2			CH2CL2	23.00000000	UGL
			9.2			CH3BR	10.00000000	UGL
			9.2			CH3CL	1.80000000	UGL
			9.2			CLC6H5	1.20000000	UGL
			9.2			CS2	5.00000000	UGL
			9.2			C13DCP	1.80000000	UGL
			9.2			C2AVE	10.00000000	UGL
			9.2			C2H3CL	12.99999988	UGL
			9.2			C2H5CL	6.89999998	UGL
			9.2			C6H6	1.70000000	UGL
			9.2			DBRCLM	1.80000000	UGL
			9.2			ETC6H5	1.40000001	UGL
			9.2			MEC6H5	1.80000000	UGL
			9.2			MEK	10.00000000	UGL
			9.2			MIBK	10.00000000	UGL
			9.2			MNBK	10.00000000	UGL
			9.2			STYR	5.00000000	UGL
			9.2			TCLEA	7.10000002	UGL
			9.2			TCLEE	2.30000001	UGL
			9.2			TRCLE	1.00000000	UGL
			9.2			T13DCP	1.59999999	UGL
			9.2			UNK293	8.50000000	UGL
			9.2			XYLEN	5.00000000	UGL
			9.2			11DCE	6.80000001	UGL
			9.2			11DCE	2.69999999	UGL
			9.2			111TCE	1.00000000	UGL
			9.2			112TCE	1.70000000	UGL
			9.2			12DCE	2.19999999	UGL
			9.2			12DCE	1.00000000	UGL
			9.2			12DCLP	3.19999999	UGL

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9.2	UM	ABHC	ND	10.00000000	UGL
9.2		AENSLF	ND	10.00000000	UGL
9.2		ALDRN	LT	6.30000001	UGL
9.2		ANAPNE	LT	1.30000000	UGL
9.2		ANAPYL	LT	3.69999999	UGL
9.2		ANTHRC	LT	1.09999999	UGL
9.2		BAANTR	LT	.82999999	UGL
9.2		BAPYR	LT	4.50000000	UGL
9.2		BBFANT	LT	2.40000001	UGL
9.2		BBHC	LT	3.19999999	UGL
9.2		BBZP	ND	10.00000000	UGL
9.2		BENSLF	ND	10.00000000	UGL
9.2		BENZOA	ND	50.00000000	UGL
9.2		BGHIPI	LT	38.00000000	UGL
9.2		BKFANT	LT	2.90000001	UGL
9.2		BZALC	ND	.10000000	UGL
9.2		B2CEXM	ND	10.00000000	UGL
9.2		B2CIPE	ND	10.00000000	UGL
9.2		B2CLEE	LT	1.59999999	UGL
9.2		B2EHP	LT	34.00000000	UGL
9.2		CHRY	LT	1.00000000	UGL
9.2		CLDAN	LT	12.00000000	UGL
9.2		CL6BZ	LT	2.80000001	UGL
9.2		CL6CP	ND	10.00000000	UGL
9.2		CL6ET	LT	8.20000005	UGL
9.2		DBAHA	LT	4.89999998	UGL
9.2		DBHC	LT	95.00000000	UGL
9.2		DBZFUR	ND	10.00000000	UGL
9.2		DEP	ND	10.00000000	UGL
9.2		DLDRN	LT	3.50000000	UGL
9.2		DMP	ND	10.00000000	UGL
9.2		DNBP	ND	10.00000000	UGL
9.2		DNOP	LT	17.99999976	UGL
9.2		ENDRN	LT	51.00000000	UGL
9.2		ENDRNK	ND	10.00000000	UGL
9.2		ESFS04	ND	10.00000000	UGL
9.2		FANT	LT	1.20000000	UGL
9.2		FLRENE	ND	10.00000000	UGL
9.2		HCBD	LT	6.00000000	UGL
9.2		HPLC	LT	5.30000001	UGL
9.2		HPLCE	LT	6.69999999	UGL
9.2		ICDPYR	LT	86.00000000	UGL
9.2		ISOPHR	ND	.10000000	UGL
9.2		LIN	LT	15.00000000	UGL
9.2		MEXCLR	ND	50.00000000	UGL
9.2		NAP	LT	4.00000000	UGL
9.2		NB	ND	10.00000000	UGL
9.2		NNDNPA	LT	6.69999999	UGL
9.2		NNDPA	ND	6.69999999	UGL
9.2		PCB016	ND	50.00000000	UGL
9.2		PCB221	ND	50.00000000	UGL
9.2		PCB232	ND	50.00000000	UGL
9.2		PCB242	ND	50.00000000	UGL
9.2		PCB248	ND	50.00000000	UGL
9.2		PCB254	ND	50.00000000	UGL
9.2		PCB260	ND	50.00000000	UGL
9.2		PCP	ND	50.00000000	UGL

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9.2	PHANTR	LT	.849999999	UGL
9.2	PHENOL	ND	10.00000000	UGL
9.2	PPDDD	LT	6.00000000	UGL
9.2	PPDDE	LT	12.00000000	UGL
9.2	PPDDT	LT	4.69999999	UGL
9.2	PYR	LT	12.00000000	UGL
9.2	TXPHEN	ND	50.00000000	UGL
9.2	UNK549		63.69999981	UGL
9.2	UNK568		13.59999990	UGL
9.2	UNK617		7.27999997	UGL
9.2	UNK621		9.99000001	UGL
9.2	UNK625		7.38999999	UGL
9.2	UNK634		8.88000000	UGL
9.2	UNK639		4.19999999	UGL
9.2	UNK688		5.62000000	UGL
9.2	UNK704		5.52999997	UGL
9.2	12DCLB	LT	5.19999999	UGL
9.2	124TCB	LT	4.60000002	UGL
9.2	13DCLB	LT	5.50000000	UGL
9.2	14DCLB	LT	6.00000000	UGL
9.2	2CLP	ND	10.00000000	UGL
9.2	2CNAP	LT	1.70000000	UGL
9.2	2MNAP	ND	10.00000000	UGL
9.2	2MP	ND	10.00000000	UGL
9.2	2NANIL	ND	50.00000000	UGL
9.2	2NP	ND	50.00000000	UGL
9.2	24DCLP	ND	10.00000000	UGL
9.2	24DMPN	ND	10.00000000	UGL
9.2	24DNP	ND	50.00000000	UGL
9.2	24DNT	LT	5.39999998	UGL
9.2	245TCP	ND	50.00000000	UGL
9.2	246TCP	ND	10.00000000	UGL
9.2	26DNT	LT	5.10000002	UGL
9.2	3NANIL	ND	50.00000000	UGL
9.2	33DCBD	ND	20.00000000	UGL
9.2	4BRPPE	ND	10.00000000	UGL
9.2	4CANIL	ND	10.00000000	UGL
9.2	4CLPPE	ND	10.00000000	UGL
9.2	4CL3C	ND	10.00000000	UGL
9.2	4MP	ND	10.00000000	UGL
9.2	4NANIL	ND	50.00000000	UGL
9.2	4NP	ND	50.00000000	UGL
9.2	46DN2C	ND	50.00000000	UGL
9.2	OILGR		8649.99987793	UGL

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RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-4C

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND		CONCENTRATION	UNITS
11.1	.0	.00	22.5	08/05/88	SB	HG	LT	.10000000	UGL
			22.5		SD	AS		280.00000000	UGL
			22.5			PB		600.00000000	UGL
			22.5		SS	AG	LT	5.56000000	UGL
			22.5			BA		2500.00000000	UGL
			22.5			CD	LT	4.08999997	UGL
			22.5			CR		723.00000000	UGL
			22.5			CU		1150.00000000	UGL
			22.5			FE		789999.99218750	UGL
			22.5			MN		8799.99987793	UGL
			22.5			SE	LT	98.59999943	UGL
			22.5			ZN		2300.00000000	UGL
			22.5		TT	SO4		4899.99993896	UGL
			22.4		UM	ACET	ND	10.00000000	UGL
			22.4			BDRCLM	ND	5.00000000	UGL
			22.4			CCL4	LT	1.00000000	UGL
			22.4			CHBR3	LT	3.69999999	UGL
			22.4			CHCL3	LT	1.00000000	UGL
			22.4			CH2CL2	LT	23.00000000	UGL
			22.4			CH3BR	ND	10.00000000	UGL
			22.4			CH3CL	LT	1.80000000	UGL
			22.4			CLC6H5	LT	1.20000000	UGL
			22.4			CS2	ND	5.00000000	UGL
			22.4			C13DCP	LT	1.80000000	UGL
			22.4			C2AVE	ND	10.00000000	UGL
			22.4			C2H3CL	LT	12.99999988	UGL
			22.4			C2H5CL	LT	6.89999998	UGL
			22.4			C6H6	LT	1.70000000	UGL
			22.4			DBRCLM	LT	1.80000000	UGL
			22.4			ETC6H5	LT	1.40000001	UGL
			22.4			MEC6H5	LT	1.80000000	UGL
			22.4			MEK	ND	10.00000000	UGL
			22.4			MIBK	ND	10.00000000	UGL
			22.4			MNBK	ND	10.00000000	UGL
			22.4			STYR	ND	5.00000000	UGL
			22.4			TCLEA	LT	7.10000002	UGL
			22.4			TCLEE	LT	2.30000001	UGL
			22.4			TRCLE	LT	1.00000000	UGL
			22.4			T13DCP	LT	1.59999999	UGL
			22.4			XYLEN	ND	5.00000000	UGL
			22.4			11DCE	LT	6.80000001	UGL
			22.4			11DCLE	LT	2.69999999	UGL
			22.4			111TCE	LT	1.00000000	UGL
			22.4			112TCE	LT	1.70000000	UGL
			22.4			12DCE	LT	2.19999999	UGL
			22.4			12DCLE	LT	1.00000000	UGL
			22.4			12DCLP	LT	3.19999999	UGL
			22.5		UM	ABHC	ND	10.00000000	UGL

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22.5	AENSLF	ND	10.00000000	UGL
22.5	ALDRN	LT	6.30000001	UGL
22.5	ANAPNE	LT	1.30000000	UGL
22.5	ANAPYL	LT	3.69999999	UGL
22.5	ANTHRC	LT	1.09999999	UGL
22.5	BAANTR	LT	.82999999	UGL
22.5	BAPYR	LT	4.50000000	UGL
22.5	BBFANT	LT	2.40000001	UGL
22.5	BBHC	LT	3.19999999	UGL
22.5	BBZP	ND	10.00000000	UGL
22.5	BENSLF	ND	10.00000000	UGL
22.5	BENZOA	ND	50.00000000	UGL
22.5	BGHIPI	LT	38.00000000	UGL
22.5	BKFANT	LT	2.90000001	UGL
22.5	BZALC	ND	.10000000	UGL
22.5	B2CEXM	ND	10.00000000	UGL
22.5	B2CIPE	ND	10.00000000	UGL
22.5	B2CLEE	LT	1.59999999	UGL
22.5	B2EHP	LT	34.00000000	UGL
22.5	CHRY	LT	1.00000000	UGL
22.5	CLDAN	LT	12.00000000	UGL
22.5	CL6BZ	LT	2.80000001	UGL
22.5	CL6CP	ND	10.00000000	UGL
22.5	CL6ET	LT	8.20000005	UGL
22.5	DBAHA	LT	4.89999998	UGL
22.5	DBHC	LT	95.00000000	UGL
22.5	DBZFUR	ND	10.00000000	UGL
22.5	DEP	ND	10.00000000	UGL
22.5	DLDRN	LT	3.50000000	UGL
22.5	DMP	ND	10.00000000	UGL
22.5	DNBP	ND	10.00000000	UGL
22.5	DNOP	LT	17.99999976	UGL
22.5	ENDRN	LT	51.00000000	UGL
22.5	ENDRNK	ND	10.00000000	UGL
22.5	ESFS04	ND	10.00000000	UGL
22.5	FANT	LT	1.20000000	UGL
22.5	FLRENE	ND	10.00000000	UGL
22.5	HCBBD	LT	6.00000000	UGL
22.5	HPCL	LT	5.30000001	UGL
22.5	HPCLE	LT	6.69999999	UGL
22.5	ICDPYR	LT	86.00000000	UGL
22.5	ISOPHR	ND	.10000000	UGL
22.5	LIN	LT	15.00000000	UGL
22.5	MEXCLR	ND	50.00000000	UGL
22.5	NAP	LT	4.00000000	UGL
22.5	NB	ND	10.00000000	UGL
22.5	NNDNPA	LT	6.69999999	UGL
22.5	NNDPA	ND	6.69999999	UGL
22.5	PCB016	ND	50.00000000	UGL
22.5	PCB221	ND	50.00000000	UGL
22.5	PCB232	ND	50.00000000	UGL
22.5	PCB242	ND	50.00000000	UGL
22.5	PCB248	ND	50.00000000	UGL
22.5	PCB254	ND	50.00000000	UGL
22.5	PCB260	ND	50.00000000	UGL
22.5	PCP	ND	50.00000000	UGL
22.5	PHANTR	LT	.84999999	UGL

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22.5	PHENOL	ND	10.00000000	UGL
22.5	PPDDD	LT	6.00000000	UGL
22.5	PPDDE	LT	12.00000000	UGL
22.5	PPDDT	LT	4.69999999	UGL
22.5	PYR	LT	12.00000000	UGL
22.5	TXPHEN	ND	50.00000000	UGL
22.5	UNK592		4.77999997	UGL
22.5	12DCLB	LT	5.19999999	UGL
22.5	124TCB	LT	4.60000002	UGL
22.5	13DCLB	LT	5.50000000	UGL
22.5	14DCLB	LT	6.00000000	UGL
22.5	2CLP	ND	10.00000000	UGL
22.5	2CNAP	LT	1.70000000	UGL
22.5	2MNAP	ND	10.00000000	UGL
22.5	2MP	ND	10.00000000	UGL
22.5	2NANIL	ND	50.00000000	UGL
22.5	2NP	ND	50.00000000	UGL
22.5	24DCLP	ND	10.00000000	UGL
22.5	24DMPN	ND	10.00000000	UGL
22.5	24DNP	ND	50.00000000	UGL
22.5	24DNT	LT	5.39999998	UGL
22.5	245TCP	ND	50.00000000	UGL
22.5	246TCP	ND	10.00000000	UGL
22.5	26DNT	LT	5.10000002	UGL
22.5	3NANIL	ND	50.00000000	UGL
22.5	33DCBD	ND	20.00000000	UGL
22.5	4BRPPE	ND	10.00000000	UGL
22.5	4CANIL	ND	10.00000000	UGL
22.5	4CLPPE	ND	10.00000000	UGL
22.5	4CL3C	ND	10.00000000	UGL
22.5	4MP	ND	10.00000000	UGL
22.5	4NANIL	ND	50.00000000	UGL
22.5	4NP	ND	50.00000000	UGL
22.5	46DN2C	ND	50.00000000	UGL
22.5	OILGR		11800.00000000	UGL

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RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-4CFB

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
		.00	.0	08/05/88	SB	HG	.61499999	UGL
			.0		SD	AS	2.91999999	UGL
			.0			PB	5.07999998	UGL
			.0		SS	AG	5.56000000	UGL
			.0			BA	1.41000000	UGL
			.0			CD	4.08999997	UGL
			.0			CR	4.44000000	UGL
			.0			CU	6.19999999	UGL
			.0			FE	160.99999809	UGL
			.0			MN	2.88000000	UGL
			.0			SE	98.59999943	UGL
			.0			ZN	29.90000010	UGL
			.0		TT	SO4	222.99999809	UGL
			.0		UM	ACET	39000.00000000	UGL
			.0			BDRCLM	5.00000000	UGL
			.0			CCL4	1.00000000	UGL
			.0			CHBR3	3.69999999	UGL
			.0			CHCL3	1.00000000	UGL
			.0			CH2CL2	23.00000000	UGL
			.0			CH3BR	10.00000000	UGL
			.0			CH3CL	1.80000000	UGL
			.0			CLC6H5	1.20000000	UGL
			.0			CS2	5.00000000	UGL
			.0			C13DCP	1.80000000	UGL
			.0			C2AVE	10.00000000	UGL
			.0			C2H3CL	12.99999988	UGL
			.0			C2H5CL	6.89999998	UGL
			.0			C6H6	1.70000000	UGL
			.0			DBRCLM	1.80000000	UGL
			.0			ETC6H5	1.40000001	UGL
			.0			MEC6H5	1.80000000	UGL
			.0			MEK	10.00000000	UGL
			.0			MIBK	10.00000000	UGL
			.0			MNBK	10.00000000	UGL
			.0			STYR	5.00000000	UGL
			.0			TCLEA	7.10000002	UGL
			.0			TCLEE	2.30000001	UGL
			.0			TRCLE	1.00000000	UGL
			.0			T13DCP	1.59999999	UGL
			.0			XYLEN	5.00000000	UGL
			.0			11DCE	6.80000001	UGL
			.0			11DCLE	2.69999999	UGL
			.0			111TCE	1.00000000	UGL
			.0			112TCE	1.70000000	UGL
			.0			12DCE	2.19999999	UGL
			.0			12DCLE	1.00000000	UGL
			.0			12DCLP	3.19999999	UGL
			.0		UM	ABHC	10.00000000	UGL

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.0	AENSLF	ND	10.00000000	UGL
.0	ALDRN	LT	6.30000001	UGL
.0	ANAPNE	LT	1.30000000	UGL
.0	ANAPYL	LT	3.69999999	UGL
.0	ANTHRC	LT	1.09999999	UGL
.0	BAANTR	LT	.82999999	UGL
.0	BAPYR	LT	4.50000000	UGL
.0	BBFANT	LT	2.40000001	UGL
.0	BBHC	LT	3.19999999	UGL
.0	BBZP	ND	10.00000000	UGL
.0	BENSLF	ND	10.00000000	UGL
.0	BENZOA	ND	50.00000000	UGL
.0	BGHIPY	LT	38.00000000	UGL
.0	BKFANT	LT	2.90000001	UGL
.0	BZALC	ND	.10000000	UGL
.0	B2CEXM	ND	10.00000000	UGL
.0	B2CIPE	ND	10.00000000	UGL
.0	B2CLEE	LT	1.59999999	UGL
.0	B2EHP	LT	34.00000000	UGL
.0	CHRY	LT	1.00000000	UGL
.0	CLDAN	LT	12.00000000	UGL
.0	CL6BZ	LT	2.80000001	UGL
.0	CL6CP	ND	10.00000000	UGL
.0	CL6ET	LT	8.20000005	UGL
.0	DBAHA	LT	4.89999998	UGL
.0	DBHC	LT	95.00000000	UGL
.0	DBZFUR	ND	10.00000000	UGL
.0	DEP	ND	10.00000000	UGL
.0	DLDRN	LT	3.50000000	UGL
.0	DMP	ND	10.00000000	UGL
.0	DNBP	ND	10.00000000	UGL
.0	DNOP	LT	17.99999976	UGL
.0	ENDRN	LT	51.00000000	UGL
.0	ENDRNK	ND	10.00000000	UGL
.0	ESFSO4	ND	10.00000000	UGL
.0	FANT	LT	1.20000000	UGL
.0	FLRENE	ND	10.00000000	UGL
.0	HCBD	LT	6.00000000	UGL
.0	HPCL	LT	5.30000001	UGL
.0	HPCLE	LT	6.69999999	UGL
.0	ICDPYR	LT	86.00000000	UGL
.0	ISOPHR	ND	.10000000	UGL
.0	LIN	LT	15.00000000	UGL
.0	MEXCLR	ND	50.00000000	UGL
.0	NAP	LT	4.00000000	UGL
.0	NB	ND	10.00000000	UGL
.0	NNDNPA	LT	6.69999999	UGL
.0	NNDPA	ND	6.69999999	UGL
.0	PCB016	ND	50.00000000	UGL
.0	PCB221	ND	50.00000000	UGL
.0	PCB232	ND	50.00000000	UGL
.0	PCB242	ND	50.00000000	UGL
.0	PCB248	ND	50.00000000	UGL
.0	PCB254	ND	50.00000000	UGL
.0	PCB260	ND	50.00000000	UGL
.0	PCP	ND	50.00000000	UGL
.0	PHANTR	LT	.84999999	UGL

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.0	PHENOL	ND	10.00000000	UGL
.0	PPDD	LT	6.00000000	UGL
.0	PPDE	LT	12.00000000	UGL
.0	PPDT	LT	4.69999999	UGL
.0	PYR	LT	12.00000000	UGL
.0	TXPHEN	ND	50.00000000	UGL
.0	12DCLB	LT	5.19999999	UGL
.0	124TCB	LT	4.60000002	UGL
.0	13DCLB	LT	5.50000000	UGL
.0	14DCLB	LT	6.00000000	UGL
.0	2CLP	ND	10.00000000	UGL
.0	2CNAP	LT	1.70000000	UGL
.0	2MNAP	ND	10.00000000	UGL
.0	2MP	ND	10.00000000	UGL
.0	2NANIL	ND	50.00000000	UGL
.0	2NP	ND	50.00000000	UGL
.0	24DCLP	ND	10.00000000	UGL
.0	24DMPN	ND	10.00000000	UGL
.0	24DNP	ND	50.00000000	UGL
.0	24DNT	LT	5.39999998	UGL
.0	245TCP	ND	50.00000000	UGL
.0	246TCP	ND	10.00000000	UGL
.0	26DNT	LT	5.10000002	UGL
.0	3NANIL	ND	50.00000000	UGL
.0	33DCBD	ND	20.00000000	UGL
.0	4BRPPE	ND	10.00000000	UGL
.0	4CANIL	ND	10.00000000	UGL
.0	4CLPPE	ND	10.00000000	UGL
.0	4CL3C	ND	10.00000000	UGL
.0	4MP	ND	10.00000000	UGL
.0	4NANIL	ND	50.00000000	UGL
.0	4NP	ND	50.00000000	UGL
.0	46DN2C	ND	50.00000000	UGL
.0	00	OILGR	7399.99993896	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-5

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
-----	-----	-----	-----	-----	-----	-----	-----	-----
11.9	.0	.00	9.4	08/03/88	00	OILGR	6500.00000000	UGL
			9.4	08/04/88	SB	HG	.87499999	UGL
			9.4		SD	AS	6.30000001	UGL
			9.4			PB	78.99999905	UGL
			9.4		SS	AG	5.56000000	UGL
			9.4			BA	712.00000000	UGL
			9.4			CD	4.08999997	UGL
			9.4			CR	4.44000000	UGL
			9.4			CU	52.20000029	UGL
			9.4			FE	6500.00000000	UGL
			9.4			MN	216.99999809	UGL
			9.4			SE	98.59999943	UGL
			9.4			ZN	215.00000000	UGL
			9.4		TT	SO4	222.99999809	UGL
			9.4		UM	ACET	10.00000000	UGL
			9.4			BDRCLM	5.00000000	UGL
			9.4			CCL4	1.00000000	UGL
			9.4			CHBR3	3.69999999	UGL
			9.4			CHCL3	1.00000000	UGL
			9.4			CH2CL2	23.00000000	UGL
			9.4			CH3BR	10.00000000	UGL
			9.4			CH3CL	1.80000000	UGL
			9.4			CLC6H5	1.20000000	UGL
			9.4			CS2	5.00000000	UGL
			9.4			C13DCP	1.80000000	UGL
			9.4			C2AVE	10.00000000	UGL
			9.4			C2H3CL	12.99999988	UGL
			9.4			C2H5CL	6.89999998	UGL
			9.4			C6H6	1.70000000	UGL
			9.4			DBRCLM	1.80000000	UGL
			9.4			ETC6H5	1.40000001	UGL
			9.4			MEC6H5	1.80000000	UGL
			9.4			MEK	10.00000000	UGL
			9.4			MIBK	10.00000000	UGL
			9.4			MNBK	10.00000000	UGL
			9.4			STYR	5.00000000	UGL
			9.4			TCLEA	7.10000002	UGL
			9.4			TCLEE	2.30000001	UGL
			9.4			TRCLE	1.00000000	UGL
			9.4			T13DCP	1.59999999	UGL
			9.4			XYLEN	5.00000000	UGL
			9.4			11DCE	6.80000001	UGL
			9.4			11DCLE	2.69999999	UGL
			9.4			111TCE	1.00000000	UGL
			9.4			112TCE	1.70000000	UGL
			9.4			12DCE	2.19999999	UGL
			9.4			12DCLE	1.00000000	UGL
			9.4			12DCLP	3.19999999	UGL

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9.4	UM	ABHC	ND	10.00000000	UGL
9.4		AENSLF	ND	10.00000000	UGL
9.4		ALDRN	LT	6.30000001	UGL
9.4		ANAPNE	LT	1.30000000	UGL
9.4		ANAPYL	LT	3.69999999	UGL
9.4		ANTHRC	LT	1.09999999	UGL
9.4		BAANTR	LT	.82999999	UGL
9.4		BAPYR	LT	4.50000000	UGL
9.4		BBFANT	LT	2.40000001	UGL
9.4		BBHC	LT	3.19999999	UGL
9.4		BBZP	ND	10.00000000	UGL
9.4		BENSLF	ND	10.00000000	UGL
9.4		BENZOA	ND	50.00000000	UGL
9.4		BGHIPY	LT	38.00000000	UGL
9.4		BKFANT	LT	2.90000001	UGL
9.4		BZALC	ND	.10000000	UGL
9.4		B2CEXM	ND	10.00000000	UGL
9.4		B2CIPE	ND	10.00000000	UGL
9.4		B2CLEE	LT	1.59999999	UGL
9.4		B2EHP	LT	34.00000000	UGL
9.4		CHRY	LT	1.00000000	UGL
9.4		CLDAN	LT	12.00000000	UGL
9.4		CL6BZ	LT	2.80000001	UGL
9.4		CL6CP	ND	10.00000000	UGL
9.4		CL6ET	LT	8.20000005	UGL
9.4		DBAHA	LT	4.89999998	UGL
9.4		DBHC	LT	95.00000000	UGL
9.4		DBZFUR	ND	10.00000000	UGL
9.4		DEP	ND	10.00000000	UGL
9.4		DLDRN	LT	3.50000000	UGL
9.4		DMP	ND	10.00000000	UGL
9.4		DNBP	ND	10.00000000	UGL
9.4		DNOP	LT	17.99999976	UGL
9.4		ENDRN	LT	51.00000000	UGL
9.4		ENDRNK	ND	10.00000000	UGL
9.4		ESFS04	ND	10.00000000	UGL
9.4		FANT	LT	1.20000000	UGL
9.4		FLRENE	ND	10.00000000	UGL
9.4		HCB0	LT	6.00000000	UGL
9.4		HPLC	LT	5.30000001	UGL
9.4		HPLCE	LT	6.69999999	UGL
9.4		ICDPYR	LT	86.00000000	UGL
9.4		ISOPHR	ND	.10000000	UGL
9.4		LIN	LT	15.00000000	UGL
9.4		MEXCLR	ND	50.00000000	UGL
9.4		NAP	LT	4.00000000	UGL
9.4		NB	ND	10.00000000	UGL
9.4		NNDNPA	LT	6.69999999	UGL
9.4		NNDPA	ND	6.69999999	UGL
9.4		PCB016	ND	50.00000000	UGL
9.4		PCB221	ND	50.00000000	UGL
9.4		PCB232	ND	50.00000000	UGL
9.4		PCB242	ND	50.00000000	UGL
9.4		PCB248	ND	50.00000000	UGL
9.4		PCB254	ND	50.00000000	UGL
9.4		PCB260	ND	50.00000000	UGL
9.4		PCP	ND	50.00000000	UGL

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9.4	PHANTR	LT	.84999999	UGL
9.4	PHENOL	ND	10.00000000	UGL
9.4	PPDD	LT	6.00000000	UGL
9.4	PPDE	LT	12.00000000	UGL
9.4	PPDDT	LT	4.69999999	UGL
9.4	PYR	LT	12.00000000	UGL
9.4	TXPHEN	ND	50.00000000	UGL
9.4	12DCLB	LT	5.19999999	UGL
9.4	124TCB	LT	4.60000002	UGL
9.4	13DCLB	LT	5.50000000	UGL
9.4	14DCLB	LT	6.00000000	UGL
9.4	2CLP	ND	10.00000000	UGL
9.4	2CNAP	LT	1.70000000	UGL
9.4	2MNAP	ND	10.00000000	UGL
9.4	2MP	ND	10.00000000	UGL
9.4	2NANIL	ND	50.00000000	UGL
9.4	2NP	ND	50.00000000	UGL
9.4	24DCLP	ND	10.00000000	UGL
9.4	24DMPN	ND	10.00000000	UGL
9.4	24DNP	ND	50.00000000	UGL
9.4	24DNT	LT	5.39999998	UGL
9.4	245TCP	ND	50.00000000	UGL
9.4	246TCP	ND	10.00000000	UGL
9.4	26DNT	LT	5.10000002	UGL
9.4	3NANIL	ND	50.00000000	UGL
9.4	33DCBD	ND	20.00000000	UGL
9.4	4BRPPE	ND	10.00000000	UGL
9.4	4CANIL	ND	10.00000000	UGL
9.4	4CLPPE	ND	10.00000000	UGL
9.4	4CL3C	ND	10.00000000	UGL
9.4	4MP	ND	10.00000000	UGL
9.4	4NANIL	ND	50.00000000	UGL
9.4	4NP	ND	50.00000000	UGL
9.4	46DN2C	ND	50.00000000	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-6

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
11.9	.0	.00	9.4	08/04/88	SB	HG	.50000000	UGL
			9.4		SD	AS	9.44000006	UGL
			9.4			PB	19.00000000	UGL
			9.4		SS	AG	5.56000000	UGL
			9.4			BA	106.99999905	UGL
			9.4			CD	4.08999997	UGL
			9.4			CR	4.44000000	UGL
			9.4			CU	211.00000000	UGL
			9.4			FE	4379.99993896	UGL
			9.4			MN	536.00000000	UGL
			9.4			SE	98.59999943	UGL
			9.4			ZN	159.00000000	UGL
			9.4		TT	SO4	222.99999809	UGL
			9.4		UM	ACET	14.00000000	UGL
			9.4			BDRCLM	5.00000000	UGL
			9.4			CCL4	1.00000000	UGL
			9.4			CHBR3	3.69999999	UGL
			9.4			CHCL3	1.00000000	UGL
			9.4			CH2CL2	23.00000000	UGL
			9.4			CH3BR	10.00000000	UGL
			9.4			CH3CL	1.80000000	UGL
			9.4			CLC6H5	1.20000000	UGL
			9.4			CS2	5.00000000	UGL
			9.4			C13DCP	1.80000000	UGL
			9.4			C2AVE	10.00000000	UGL
			9.4			C2H3CL	12.99999988	UGL
			9.4			C2H5CL	6.89999998	UGL
			9.4			C6H6	1.70000000	UGL
			9.4			DBRCLM	1.80000000	UGL
			9.4			ETC6H5	1.40000001	UGL
			9.4			MEC6H5	1.80000000	UGL
			9.4			MEK	10.00000000	UGL
			9.4			MIBK	10.00000000	UGL
			9.4			MNBK	10.00000000	UGL
			9.4			STYR	5.00000000	UGL
			9.4			TCLEA	7.10000002	UGL
			9.4			TCLEE	2.30000001	UGL
			9.4			TRCLE	1.00000000	UGL
			9.4			T13DCP	1.59999999	UGL
			9.4			UNK293	28.00000000	UGL
			9.4			XYLEN	5.00000000	UGL
			9.4			11DCE	6.80000001	UGL
			9.4			11DCLE	2.69999999	UGL
			9.4			111TCE	1.00000000	UGL
			9.4			112TCE	1.70000000	UGL
			9.4			12DCE	2.19999999	UGL
			9.4			12DCLE	1.00000000	UGL
			9.4			12DCLP	3.19999999	UGL

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9.4	UM	ABHC	ND	10.00000000	UGL
9.4		AENSLF	ND	10.00000000	UGL
9.4		ALDRN	LT	6.30000001	UGL
9.4		ANAPNE	LT	1.30000000	UGL
9.4		ANAPYL	LT	3.69999999	UGL
9.4		ANTHRC	LT	1.09999999	UGL
9.4		BAANTR	LT	.82999999	UGL
9.4		BAPYR	LT	4.50000000	UGL
9.4		BBFANT	LT	2.40000001	UGL
9.4		BBHC	LT	3.19999999	UGL
9.4		BBZP	ND	10.00000000	UGL
9.4		BENSLF	ND	10.00000000	UGL
9.4		BENZOA	ND	50.00000000	UGL
9.4		BGHIPY	LT	38.00000000	UGL
9.4		BKFANT	LT	2.90000001	UGL
9.4		BZALC	ND	.10000000	UGL
9.4		B2CEXM	ND	10.00000000	UGL
9.4		B2CIPE	ND	10.00000000	UGL
9.4		B2CLEE	LT	1.59999999	UGL
9.4		B2EHP	LT	34.00000000	UGL
9.4		CHRY	LT	1.00000000	UGL
9.4		CLDAN	LT	12.00000000	UGL
9.4		CL6BZ	LT	2.80000001	UGL
9.4		CL6CP	ND	10.00000000	UGL
9.4		CL6ET	LT	8.20000005	UGL
9.4		DBAHA	LT	4.89999998	UGL
9.4		DBHC	LT	95.00000000	UGL
9.4		DBZFUR	ND	10.00000000	UGL
9.4		DEP	ND	10.00000000	UGL
9.4		DLDRN	LT	3.50000000	UGL
9.4		DMP	ND	10.00000000	UGL
9.4		DNBP	ND	10.00000000	UGL
9.4		DNOP	LT	17.99999976	UGL
9.4		ENDRN	LT	51.00000000	UGL
9.4		ENDRNK	ND	10.00000000	UGL
9.4		ESFS04	ND	10.00000000	UGL
9.4		FANT	LT	1.20000000	UGL
9.4		FLRENE	ND	10.00000000	UGL
9.4		HCBD	LT	6.00000000	UGL
9.4		HPLC	LT	5.30000001	UGL
9.4		HPLCE	LT	6.69999999	UGL
9.4		ICDPYR	LT	86.00000000	UGL
9.4		ISOPHR	ND	.10000000	UGL
9.4		LIN	LT	15.00000000	UGL
9.4		MEXCLR	ND	50.00000000	UGL
9.4		NAP	LT	4.00000000	UGL
9.4		NB	ND	10.00000000	UGL
9.4		NNDNPA	LT	6.69999999	UGL
9.4		NNDPA	ND	6.69999999	UGL
9.4		PCBO16	ND	50.00000000	UGL
9.4		PCB221	ND	50.00000000	UGL
9.4		PCB232	ND	50.00000000	UGL
9.4		PCB242	ND	50.00000000	UGL
9.4		PCB248	ND	50.00000000	UGL
9.4		PCB254	ND	50.00000000	UGL
9.4		PCB260	ND	50.00000000	UGL
9.4		PCP	ND	50.00000000	UGL

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9.4	PHANTR	LT	.84999999	UGL
9.4	PHENOL	ND	10.00000000	UGL
9.4	PPDDD	LT	6.00000000	UGL
9.4	PPDDE	LT	12.00000000	UGL
9.4	PPDDT	LT	4.69999999	UGL
9.4	PYR	LT	12.00000000	UGL
9.4	TXPHEN	ND	50.00000000	UGL
9.4	UNK529		4.02999997	UGL
9.4	12DCLB	LT	5.19999999	UGL
9.4	124TCB	LT	4.60000002	UGL
9.4	13DCLB	LT	5.50000000	UGL
9.4	14DCLB	LT	6.00000000	UGL
9.4	2CLP	ND	10.00000000	UGL
9.4	2CNAP	LT	1.70000000	UGL
9.4	2MNAP	ND	10.00000000	UGL
9.4	2MP	ND	10.00000000	UGL
9.4	2NANIL	ND	50.00000000	UGL
9.4	2NP	ND	50.00000000	UGL
9.4	24DCLP	ND	10.00000000	UGL
9.4	24DMPN	ND	10.00000000	UGL
9.4	24DNP	ND	50.00000000	UGL
9.4	24DNT	LT	5.39999998	UGL
9.4	245TCP	ND	50.00000000	UGL
9.4	246TCP	ND	10.00000000	UGL
9.4	26DNT	LT	5.10000002	UGL
9.4	3NANIL	ND	50.00000000	UGL
9.4	33DCBD	ND	20.00000000	UGL
9.4	4BRPPE	ND	10.00000000	UGL
9.4	4CANIL	ND	10.00000000	UGL
9.4	4CLPPE	ND	10.00000000	UGL
9.4	4CL3C	ND	10.00000000	UGL
9.4	4MP	ND	10.00000000	UGL
9.4	4NANIL	ND	50.00000000	UGL
9.4	4NP	ND	50.00000000	UGL
9.4	46DN2C	ND	50.00000000	UGL
9.4	00 OILGR		9299.99987793	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-7

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
13.3	.0	.00	46.4	08/03/88	UM	ACET	53.00000000	UGL
			46.4			BDRCLM	5.00000000	UGL
			46.4			CCL4	1.00000000	UGL
			46.4			CHBR3	3.69999999	UGL
			46.4			CHCL3	1.00000000	UGL
			46.4			CH2CL2	23.00000000	UGL
			46.4			CH3BR	10.00000000	UGL
			46.4			CH3CL	1.80000000	UGL
			46.4			CLC6H5	1.20000000	UGL
			46.4			CS2	14.00000000	UGL
			46.4			C13DCP	1.80000000	UGL
			46.4			C2AVE	10.00000000	UGL
			46.4			C2H3CL	12.99999988	UGL
			46.4			C2H5CL	6.89999998	UGL
			46.4			C6H6	1.70000000	UGL
			46.4			DBRCLM	1.80000000	UGL
			46.4			ETC6H5	1.40000001	UGL
			46.4			MEC6H5	1.80000000	UGL
			46.4			MEK	10.00000000	UGL
			46.4			MIBK	10.00000000	UGL
			46.4			MNBK	10.00000000	UGL
			46.4			STYR	5.00000000	UGL
			46.4			TCLEA	7.10000002	UGL
			46.4			TCLEE	2.30000001	UGL
			46.4			TRCLE	1.00000000	UGL
			46.4			T13DCP	1.59999999	UGL
			46.4			UNK292	20.00000000	UGL
			46.4			XYLEN	5.00000000	UGL
			46.4			11DCE	6.80000001	UGL
			46.4			11DCLE	2.69999999	UGL
			46.4			111TCE	1.00000000	UGL
			46.4			112TCE	1.70000000	UGL
			46.4			12DCE	2.19999999	UGL
			46.4			12DCLE	1.00000000	UGL
			46.4			12DCLP	3.19999999	UGL
			46.4	08/04/88	SB	HG	.68299999	UGL
			46.4		SD	AS	2.91999999	UGL
			46.4			PB	2.59999999	UGL
			46.4		SS	AG	5.56000000	UGL
			46.4			BA	265.99999619	UGL
			46.4			CD	4.08999997	UGL
			46.4			CR	4.44000000	UGL
			46.4			CU	6.19999999	UGL
			46.4			FE	437.99999619	UGL
			46.4			MN	15.19999993	UGL
			46.4			SE	98.59999943	UGL
			46.4			ZN	34.69999981	UGL
			46.4		TT	S04	222.99999809	UGL

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46.4	UM	ABHC	ND	10.00000000	UGL
46.4		AENSLF	ND	10.00000000	UGL
46.4		ALDRN	LT	6.30000001	UGL
46.4		ANAPNE	LT	1.30000000	UGL
46.4		ANAPYL	LT	3.69999999	UGL
46.4		ANTHRC	LT	1.09999999	UGL
46.4		BAANTR	LT	.82999999	UGL
46.4		BAPYR	LT	4.50000000	UGL
46.4		BBFANT	LT	2.40000001	UGL
46.4		BBHC	LT	3.19999999	UGL
46.4		BBZP	ND	10.00000000	UGL
46.4		BENSLF	ND	10.00000000	UGL
46.4		BENZOA		87.50000000	UGL
46.4		BGHIPI	LT	38.00000000	UGL
46.4		BKFANT	LT	2.90000001	UGL
46.4		BZALC	ND	.10000000	UGL
46.4		B2CEXM	ND	10.00000000	UGL
46.4		B2CIPE	ND	10.00000000	UGL
46.4		B2CLEE	LT	1.59999999	UGL
46.4		B2EHP	LT	34.00000000	UGL
46.4		CHRY	LT	1.00000000	UGL
46.4		CLDAN	LT	12.00000000	UGL
46.4		CL6BZ	LT	2.80000001	UGL
46.4		CL6CP	ND	10.00000000	UGL
46.4		CL6ET	LT	8.20000005	UGL
46.4		DBAHA	LT	4.89999998	UGL
46.4		DBHC	LT	95.00000000	UGL
46.4		DBZFUR	ND	10.00000000	UGL
46.4		DEP	ND	10.00000000	UGL
46.4		DLDRN	LT	3.50000000	UGL
46.4		DMP	ND	10.00000000	UGL
46.4		DNBP	ND	10.00000000	UGL
46.4		DNOP	LT	17.99999976	UGL
46.4		ENDRN	LT	51.00000000	UGL
46.4		ENDRNK	ND	10.00000000	UGL
46.4		ESFS04	ND	10.00000000	UGL
46.4		FANT	LT	1.20000000	UGL
46.4		FLRENE	ND	10.00000000	UGL
46.4		HCB0	LT	6.00000000	UGL
46.4		HPLC	LT	5.30000001	UGL
46.4		HPLCE	LT	6.69999999	UGL
46.4		ICDPYR	LT	86.00000000	UGL
46.4		ISOPHR	ND	.10000000	UGL
46.4		LIN	LT	15.00000000	UGL
46.4		MEXCLR	ND	50.00000000	UGL
46.4		NAP	LT	4.00000000	UGL
46.4		NB	ND	10.00000000	UGL
46.4		NNDNPA	LT	6.69999999	UGL
46.4		NNDPA	ND	6.69999999	UGL
46.4		PCB016	ND	50.00000000	UGL
46.4		PCB221	ND	50.00000000	UGL
46.4		PCB232	ND	50.00000000	UGL
46.4		PCB242	ND	50.00000000	UGL
46.4		PCB248	ND	50.00000000	UGL
46.4		PCB254	ND	50.00000000	UGL
46.4		PCB260	ND	50.00000000	UGL
46.4		PCP	ND	50.00000000	UGL

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46.4	PHANTR	LT	.84999999	UGL
46.4	PHENOL	ND	10.00000000	UGL
46.4	PPDDD	LT	6.00000000	UGL
46.4	PPDDE	LT	12.00000000	UGL
46.4	PPDDT	LT	4.69999999	UGL
46.4	PYR	LT	12.00000000	UGL
46.4	TXPHEN	ND	50.00000000	UGL
46.4	UNK529		4.77999997	UGL
46.4	UNK547		4.00000000	UGL
46.4	UNK561		22.40000010	UGL
46.4	UNK674		4.10000002	UGL
46.4	12DCLB	LT	5.19999999	UGL
46.4	124TCB	LT	4.60000002	UGL
46.4	13DCLB	LT	5.50000000	UGL
46.4	14DCLB	LT	6.00000000	UGL
46.4	2CLP	ND	10.00000000	UGL
46.4	2CNAP	LT	1.70000000	UGL
46.4	2MNAP	ND	10.00000000	UGL
46.4	2MP	ND	10.00000000	UGL
46.4	2NANIL	ND	50.00000000	UGL
46.4	2NP	ND	50.00000000	UGL
46.4	24DCLP	ND	10.00000000	UGL
46.4	24DMPN	ND	10.00000000	UGL
46.4	24DNP	ND	50.00000000	UGL
46.4	24DNT	LT	5.39999998	UGL
46.4	245TCP	ND	50.00000000	UGL
46.4	246TCP	ND	10.00000000	UGL
46.4	26DNT	LT	5.10000002	UGL
46.4	3NANIL	ND	50.00000000	UGL
46.4	33DCBD	ND	20.00000000	UGL
46.4	4BRPPE	ND	10.00000000	UGL
46.4	4CANIL	ND	10.00000000	UGL
46.4	4CLPPE	ND	10.00000000	UGL
46.4	4CL3C	ND	10.00000000	UGL
46.4	4MP	ND	10.00000000	UGL
46.4	4NANIL	ND	50.00000000	UGL
46.4	4NP	ND	50.00000000	UGL
46.4	46DN2C	ND	50.00000000	UGL
46.4	OILGR		6500.00000000	UGL

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RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-8

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
11.2	.0	.00	9.4	08/03/88	SB	HG	.61499999	UGL
			9.4		SD	AS	2.91999999	UGL
			9.4			PB	3.24000001	UGL
			9.4		SS	AG	5.56000000	UGL
			9.4			BA	50.50000000	UGL
			9.4			CD	4.08999997	UGL
			9.4			CR	4.44000000	UGL
			9.4			CU	6.19999999	UGL
			9.4			FE	4649.99993896	UGL
			9.4			MN	1099.99998474	UGL
			9.4			SE	98.59999943	UGL
			9.4			ZN	37.29999971	UGL
			9.4		TT	SD4	222.99999809	UGL
			9.4		UM	ACET	10.00000000	UGL
			9.4			BDRCLM	5.00000000	UGL
			9.4			CCL4	1.00000000	UGL
			9.4			CHBR3	3.69999999	UGL
			9.4			CHCL3	1.00000000	UGL
			9.4			CH2CL2	23.00000000	UGL
			9.4			CH3BR	10.00000000	UGL
			9.4			CH3CL	1.80000000	UGL
			9.4			CLC6H5	1.20000000	UGL
			9.4			CS2	5.00000000	UGL
			9.4			C13DCP	1.80000000	UGL
			9.4			C2AVE	10.00000000	UGL
			9.4			C2H3CL	12.99999988	UGL
			9.4			C2H5CL	6.89999998	UGL
			9.4			C6H6	1.70000000	UGL
			9.4			DBRCLM	1.80000000	UGL
			9.4			ETC6H5	1.40000001	UGL
			9.4			MEC6H5	1.80000000	UGL
			9.4			MEK	10.00000000	UGL
			9.4			MIBK	10.00000000	UGL
			9.4			MNBK	10.00000000	UGL
			9.4			STYR	5.00000000	UGL
			9.4			TCLEA	7.10000002	UGL
			9.4			TCLEE	2.30000001	UGL
			9.4			TRCLE	1.00000000	UGL
			9.4			T13DCP	1.59999999	UGL
			9.4			UNK294	43.00000000	UGL
			9.4			XYLEN	5.00000000	UGL
			9.4			11DCE	6.80000001	UGL
			9.4			11DCLE	2.69999999	UGL
			9.4			111TCE	1.00000000	UGL
			9.4			112TCE	1.70000000	UGL
			9.4			12DCE	2.19999999	UGL
			9.4			12DCLE	1.00000000	UGL
			9.4			12DCLP	3.19999999	UGL

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9.4	UM	ABHC	ND	10.00000000	UGL
9.4		AENSLF	ND	10.00000000	UGL
9.4		ALDRN	LT	6.30000001	UGL
9.4		ANAPNE	LT	1.30000000	UGL
9.4		ANAPYL	LT	3.69999999	UGL
9.4		ANTHRC	LT	1.09999999	UGL
9.4		BAANTR	LT	.82999999	UGL
9.4		BAPYR	LT	4.50000000	UGL
9.4		BBFANT	LT	2.40000001	UGL
9.4		BBHC	LT	3.19999999	UGL
9.4		BBZP	ND	10.00000000	UGL
9.4		BENSLF	ND	10.00000000	UGL
9.4		BENZOA	ND	50.00000000	UGL
9.4		BGHIPY	LT	38.00000000	UGL
9.4		BKFANT	LT	2.90000001	UGL
9.4		BZALC	ND	.10000000	UGL
9.4		B2CEXM	ND	10.00000000	UGL
9.4		B2CIPE	ND	10.00000000	UGL
9.4		B2CLEE	LT	1.59999999	UGL
9.4		B2EHP	LT	34.00000000	UGL
9.4		CHRY	LT	1.00000000	UGL
9.4		CLDAN	LT	12.00000000	UGL
9.4		CL6BZ	LT	2.80000001	UGL
9.4		CL6CP	ND	10.00000000	UGL
9.4		CL6ET	LT	8.20000005	UGL
9.4		DBAHA	LT	4.89999998	UGL
9.4		DBHC	LT	95.00000000	UGL
9.4		DBZFUR	ND	10.00000000	UGL
9.4		DEP	ND	10.00000000	UGL
9.4		DLDRN	LT	3.50000000	UGL
9.4		DMP	ND	10.00000000	UGL
9.4		DNBP	ND	10.00000000	UGL
9.4		DNOP	LT	17.99999976	UGL
9.4		ENDRN	LT	51.00000000	UGL
9.4		ENDRNK	ND	10.00000000	UGL
9.4		ESFS04	ND	10.00000000	UGL
9.4		FANT	LT	1.20000000	UGL
9.4		FLRENE	ND	10.00000000	UGL
9.4		HCBD	LT	6.00000000	UGL
9.4		HPLC	LT	5.30000001	UGL
9.4		HPLCE	LT	6.69999999	UGL
9.4		ICDPYR	LT	86.00000000	UGL
9.4		ISOPHR	ND	.10000000	UGL
9.4		LIN	LT	15.00000000	UGL
9.4		MEXCLR	ND	50.00000000	UGL
9.4		NAP	LT	4.00000000	UGL
9.4		NB	ND	10.00000000	UGL
9.4		NNDNPA	LT	6.69999999	UGL
9.4		NNDPA	ND	6.69999999	UGL
9.4		PCB016	ND	50.00000000	UGL
9.4		PCB221	ND	50.00000000	UGL
9.4		PCB232	ND	50.00000000	UGL
9.4		PCB242	ND	50.00000000	UGL
9.4		PCB248	ND	50.00000000	UGL
9.4		PCB254	ND	50.00000000	UGL
9.4		PCB260	ND	50.00000000	UGL
9.4		PCP	ND	50.00000000	UGL

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9.4	PHANTR	LT	.84999999	UGL
9.4	PHENOL	ND	10.00000000	UGL
9.4	PPDDD	LT	6.00000000	UGL
9.4	PPDDE	LT	12.00000000	UGL
9.4	PPDDT	LT	4.69999999	UGL
9.4	PYR	LT	12.00000000	UGL
9.4	TXPHEN	ND	50.00000000	UGL
9.4	12DCLB	LT	5.19999999	UGL
9.4	124TCB	LT	4.60000002	UGL
9.4	13DCLB	LT	5.50000000	UGL
9.4	14DCLB	LT	6.00000000	UGL
9.4	2CLP	ND	10.00000000	UGL
9.4	2CNAP	LT	1.70000000	UGL
9.4	2MNAP	ND	10.00000000	UGL
9.4	2MP	ND	10.00000000	UGL
9.4	2NANIL	ND	50.00000000	UGL
9.4	2NP	ND	50.00000000	UGL
9.4	24DCLP	ND	10.00000000	UGL
9.4	24DMPN	ND	10.00000000	UGL
9.4	24DNP	ND	50.00000000	UGL
9.4	24DNT	LT	5.39999998	UGL
9.4	245TCP	ND	50.00000000	UGL
9.4	246TCP	ND	10.00000000	UGL
9.4	26DNT	LT	5.10000002	UGL
9.4	3NANIL	ND	50.00000000	UGL
9.4	33DCBD	ND	20.00000000	UGL
9.4	4BRPPE	ND	10.00000000	UGL
9.4	4CANIL	ND	10.00000000	UGL
9.4	4CLPPE	ND	10.00000000	UGL
9.4	4CL3C	ND	10.00000000	UGL
9.4	4MP	ND	10.00000000	UGL
9.4	4NANIL	ND	50.00000000	UGL
9.4	4NP	ND	50.00000000	UGL
9.4	46DN2C	ND	50.00000000	UGL
9.4	00 OILGR		6600.00000000	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-9

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
11.6	.0	.00	9.5	08/05/88	SB	HG	.78800000	UGL
			9.5		SD	AS	4.79000002	UGL
			9.5			PB	11.29999995	UGL
			9.5		SS	AG	5.56000000	UGL
			9.5			BA	165.00000000	UGL
			9.5			CD	4.08999997	UGL
			9.5			CR	6.60000002	UGL
			9.5			CU	14.09999990	UGL
			9.5			FE	26999.99975586	UGL
			9.5			MN	764.99999237	UGL
			9.5			SE	98.59999943	UGL
			9.5			ZN	62.09999943	UGL
			9.5		TF	CYN	5.00000000	UGL
			9.5		TT	SO4	1000.00000000	UGL
			9.5		UM	ACET	10.00000000	UGL
			9.5			BDRCLM	5.00000000	UGL
			9.5			CCL4	1.00000000	UGL
			9.5			CHBR3	3.69999999	UGL
			9.5			CHCL3	1.00000000	UGL
			9.5			CH2CL2	20.00000000	UGL
			9.5			CH3BR	10.00000000	UGL
			9.5			CH3CL	1.80000000	UGL
			9.5			CLC6H5	1.20000000	UGL
			9.5			CS2	5.00000000	UGL
			9.5			C13DCP	1.80000000	UGL
			9.5			C2AVE	10.00000000	UGL
			9.5			C2H3CL	12.99999988	UGL
			9.5			C2H5CL	6.89999998	UGL
			9.5			C6H6	1.70000000	UGL
			9.5			DBRCLM	1.80000000	UGL
			9.5			ETC6H5	1.40000001	UGL
			9.5			MEC6H5	1.80000000	UGL
			9.5			MEK	10.00000000	UGL
			9.5			MIBK	10.00000000	UGL
			9.5			MNBK	10.00000000	UGL
			9.5			STYR	5.00000000	UGL
			9.5			TCLEA	7.10000002	UGL
			9.5			TCLEE	2.30000001	UGL
			9.5			TRCLE	1.00000000	UGL
			9.5			T13DCP	1.59999999	UGL
			9.5			XYLEN	5.00000000	UGL
			9.5			11DCE	6.80000001	UGL
			9.5			11DCLE	2.69999999	UGL
			9.5			111TCE	1.00000000	UGL
			9.5			112TCE	1.70000000	UGL
			9.5			12DCE	2.19999999	UGL
			9.5			12DCLE	1.00000000	UGL
			9.5			12DCLP	3.19999999	UGL

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9.5	UM	ABHC	ND	10.00000000	UGL
9.5		AENSLF	ND	10.00000000	UGL
9.5		ALDRN	LT	6.30000001	UGL
9.5		ANAPNE		26.39999986	UGL
9.5		ANAPYL	LT	3.69999999	UGL
9.5		ANTHRC	LT	1.09999999	UGL
9.5		BAANTR	LT	.82999999	UGL
9.5		BAPYR	LT	4.50000000	UGL
9.5		BBFANT	LT	2.40000001	UGL
9.5		BBHC	LT	3.19999999	UGL
9.5		BBZP	ND	10.00000000	UGL
9.5		BENSLF	ND	10.00000000	UGL
9.5		BENZOA	ND	50.00000000	UGL
9.5		BGHIPY	LT	38.00000000	UGL
9.5		BKFANT	LT	2.90000001	UGL
9.5		BZALC	ND	.10000000	UGL
9.5		B2CEXM	ND	10.00000000	UGL
9.5		B2CIPE	ND	10.00000000	UGL
9.5		B2CLEE	LT	1.59999999	UGL
9.5		B2EHP	LT	34.00000000	UGL
9.5		CHRY	LT	1.00000000	UGL
9.5		CLDAN	LT	12.00000000	UGL
9.5		CL6BZ	LT	2.80000001	UGL
9.5		CL6CP	ND	10.00000000	UGL
9.5		CL6ET	LT	8.20000005	UGL
9.5		DBAHA	LT	4.89999998	UGL
9.5		DBHC	LT	95.00000000	UGL
9.5		DBZFUR		16.59999990	UGL
9.5		DEP	ND	10.00000000	UGL
9.5		DLDRN	LT	3.50000000	UGL
9.5		DMP	ND	10.00000000	UGL
9.5		DNBP	ND	10.00000000	UGL
9.5		DNOP	LT	17.99999976	UGL
9.5		ENDRN	LT	51.00000000	UGL
9.5		ENDRNK	ND	10.00000000	UGL
9.5		ESFSO4	ND	10.00000000	UGL
9.5		FANT		2.94999999	UGL
9.5		FLRENE		18.49999976	UGL
9.5		HCBP	LT	6.00000000	UGL
9.5		HPCL	LT	5.30000001	UGL
9.5		HPCLE	LT	6.69999999	UGL
9.5		ICDPYR	LT	86.00000000	UGL
9.5		ISOPHR	ND	.10000000	UGL
9.5		LIN	LT	15.00000000	UGL
9.5		MEXCLR	ND	50.00000000	UGL
9.5		NAP		16.09999990	UGL
9.5		NB	ND	10.00000000	UGL
9.5		NNDNPA	LT	6.69999999	UGL
9.5		NNDPA	ND	6.69999999	UGL
9.5		PCB016	ND	50.00000000	UGL
9.5		PCB221	ND	50.00000000	UGL
9.5		PCB232	ND	50.00000000	UGL
9.5		PCB242	ND	50.00000000	UGL
9.5		PCB248	ND	50.00000000	UGL
9.5		PCB254	ND	50.00000000	UGL
9.5		PCB260	ND	50.00000000	UGL
9.5		PCP	ND	50.00000000	UGL

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9.5	PHANTR		20.39999986	UGL
9.5	PHENOL	ND	10.00000000	UGL
9.5	PPDDD	LT	6.00000000	UGL
9.5	PPDDE	LT	12.00000000	UGL
9.5	PPDDT	LT	4.69999999	UGL
9.5	PYR	LT	12.00000000	UGL
9.5	TXPHEN	ND	50.00000000	UGL
9.5	UNK549		4.72000003	UGL
9.5	UNK554		8.20000005	UGL
9.5	UNK562		4.06999999	UGL
9.5	UNK572		6.16000003	UGL
9.5	UNK573		7.66000003	UGL
9.5	UNK586		7.50999999	UGL
9.5	UNK590		9.91999996	UGL
9.5	UNK659		5.00000000	UGL
9.5	12DCLB	LT	5.19999999	UGL
9.5	124TCB	LT	4.60000002	UGL
9.5	13DCLB	LT	5.50000000	UGL
9.5	14DCLB	LT	6.00000000	UGL
9.5	2CLP	ND	10.00000000	UGL
9.5	2CNAP	LT	1.70000000	UGL
9.5	2MNAP		215.00000000	UGL
9.5	2MP	ND	10.00000000	UGL
9.5	2NANIL	ND	50.00000000	UGL
9.5	2NP	ND	50.00000000	UGL
9.5	24DCLP	ND	10.00000000	UGL
9.5	24DMPN	ND	10.00000000	UGL
9.5	24DNP	ND	50.00000000	UGL
9.5	24DNT	LT	5.39999998	UGL
9.5	245TCP	ND	50.00000000	UGL
9.5	246TCP	ND	10.00000000	UGL
9.5	26DNT	LT	5.10000002	UGL
9.5	3NANIL	ND	50.00000000	UGL
9.5	33DCBD	ND	20.00000000	UGL
9.5	4BRPPE	ND	10.00000000	UGL
9.5	4CANIL	ND	10.00000000	UGL
9.5	4CLPPE	ND	10.00000000	UGL
9.5	4CL3C	ND	10.00000000	UGL
9.5	4MP	ND	10.00000000	UGL
9.5	4NANIL	ND	50.00000000	UGL
9.5	4NP	ND	50.00000000	UGL
9.5	46DN2C	ND	50.00000000	UGL
9.5	00		6399.99993896	UGL
	01LGR			

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-10

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
10.5	.0	.00	9.0	08/02/88	SB	HG	.73999999	UGL
			9.0		SD	AS	10.10000002	UGL
			9.0			PB	29.00000000	UGL
			9.0		SS	AG	5.56000000	UGL
			9.0			BA	47.59999990	UGL
			9.0			CD	4.08999997	UGL
			9.0			CR	10.10000002	UGL
			9.0			CU	38.79999971	UGL
			9.0			FE	3979.99996948	UGL
			9.0			MN	557.99999237	UGL
			9.0			SE	98.59999943	UGL
			9.0			ZN	137.99999809	UGL
			9.0		TT	S04	5500.00000000	UGL
			7.3		UM	ACET	10.00000000	UGL
			7.3			BDRCLM	5.00000000	UGL
			7.3			CCL4	1.00000000	UGL
			7.3			CHBR3	3.69999999	UGL
			7.3			CHCL3	1.00000000	UGL
			7.3			CH2CL2	23.00000000	UGL
			7.3			CH3BR	10.00000000	UGL
			7.3			CH3CL	1.80000000	UGL
			7.3			CLC6H5	1.20000000	UGL
			7.3			CS2	5.00000000	UGL
			7.3			C13DCP	1.80000000	UGL
			7.3			C2AVE	10.00000000	UGL
			7.3			C2H3CL	12.99999988	UGL
			7.3			C2H5CL	6.89999998	UGL
			7.3			C6H6	1.70000000	UGL
			7.3			DBRCLM	1.80000000	UGL
			7.3			ETC6H5	1.40000001	UGL
			7.3			MEC6H5	1.80000000	UGL
			7.3			MEK	10.00000000	UGL
			7.3			MIBK	10.00000000	UGL
			7.3			MNBK	10.00000000	UGL
			7.3			STYR	5.00000000	UGL
			7.3			TCLEA	7.10000002	UGL
			7.3			TCLEE	2.30000001	UGL
			7.3			TRCLE	1.00000000	UGL
			7.3			T13DCP	1.59999999	UGL
			7.3			XYLEN	5.00000000	UGL
			7.3			11DCE	6.80000001	UGL
			7.3			11DCLE	2.69999999	UGL
			7.3			111TCE	1.00000000	UGL
			7.3			112TCE	1.70000000	UGL
			7.3			12DCE	2.19999999	UGL
			7.3			12DCLE	1.00000000	UGL
			7.3			12DCLP	3.19999999	UGL
			9.0		UM	ABHC	10.00000000	UGL

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9.0	AENSLF	ND	10.00000000	UGL
9.0	ALDRN	LT	6.30000001	UGL
9.0	ANAPNE	LT	1.30000000	UGL
9.0	ANAPYL	LT	3.69999999	UGL
9.0	ANTHRC	LT	1.09999999	UGL
9.0	BAANTR	LT	.82999999	UGL
9.0	BAPYR	LT	4.50000000	UGL
9.0	BBFANT	LT	2.40000001	UGL
9.0	BBHC	LT	3.19999999	UGL
9.0	BBZP	ND	10.00000000	UGL
9.0	BENSLF	ND	10.00000000	UGL
9.0	BENZOA	ND	50.00000000	UGL
9.0	BGHIPY	LT	38.00000000	UGL
9.0	BKFANT	LT	2.90000001	UGL
9.0	BZALC	ND	.10000000	UGL
9.0	B2CEXM	ND	10.00000000	UGL
9.0	B2CIPE	ND	10.00000000	UGL
9.0	B2CLEE	LT	1.59999999	UGL
9.0	B2EHP	LT	34.00000000	UGL
9.0	CHRY	LT	1.00000000	UGL
9.0	CLDAN	LT	12.00000000	UGL
9.0	CL6BZ	LT	2.80000001	UGL
9.0	CL6CP	ND	10.00000000	UGL
9.0	CL6ET	LT	8.20000005	UGL
9.0	DBAHA	LT	4.89999998	UGL
9.0	DBHC	LT	95.00000000	UGL
9.0	DBZFUR	ND	10.00000000	UGL
9.0	DEP	ND	10.00000000	UGL
9.0	DLDRN	LT	3.50000000	UGL
9.0	DMP	ND	10.00000000	UGL
9.0	DNBP	ND	10.00000000	UGL
9.0	DNOP	LT	17.99999976	UGL
9.0	ENDRN	LT	51.00000000	UGL
9.0	ENDRNK	ND	10.00000000	UGL
9.0	ESFS04	ND	10.00000000	UGL
9.0	FANT	LT	1.20000000	UGL
9.0	FLRENE	ND	10.00000000	UGL
9.0	HCBD	LT	6.00000000	UGL
9.0	HPLC	LT	5.30000001	UGL
9.0	HPLCE	LT	6.69999999	UGL
9.0	ICDPYR	LT	86.00000000	UGL
9.0	ISOPHR	ND	.10000000	UGL
9.0	LIN	LT	15.00000000	UGL
9.0	MEXCLR	ND	50.00000000	UGL
9.0	NAP	LT	4.00000000	UGL
9.0	NB	ND	10.00000000	UGL
9.0	NNDNPA	LT	6.69999999	UGL
9.0	NNDPA	ND	6.69999999	UGL
9.0	PCB016	ND	50.00000000	UGL
9.0	PCB221	ND	50.00000000	UGL
9.0	PCB232	ND	50.00000000	UGL
9.0	PCB242	ND	50.00000000	UGL
9.0	PCB248	ND	50.00000000	UGL
9.0	PCB254	ND	50.00000000	UGL
9.0	PCB260	ND	50.00000000	UGL
9.0	PCP	ND	50.00000000	UGL
9.0	PHANTR	LT	.84999999	UGL

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9.0	PHENOL	ND	10.00000000	UGL
9.0	PPDDD	LT	6.00000000	UGL
9.0	PPDDE	LT	12.00000000	UGL
9.0	PPDDT	LT	4.69999999	UGL
9.0	PYR	LT	12.00000000	UGL
9.0	TXPHEN	ND	50.00000000	UGL
9.0	UNK569		22.29999971	UGL
9.0	UNK643		2.77000001	UGL
9.0	UNK667		109.00000000	UGL
9.0	UNK668		6.92000002	UGL
9.0	UNK675		6.44999999	UGL
9.0	UNK699		7.16000003	UGL
9.0	UNK703		7.64999998	UGL
9.0	UNK709		6.08999997	UGL
9.0	12DCLB	LT	5.19999999	UGL
9.0	124TCB	LT	4.60000002	UGL
9.0	13DCLB	LT	5.50000000	UGL
9.0	14DCLB	LT	6.00000000	UGL
9.0	2CLP	ND	10.00000000	UGL
9.0	2CNAP	LT	1.70000000	UGL
9.0	2MNAP	ND	10.00000000	UGL
9.0	2MP	ND	10.00000000	UGL
9.0	2NANIL	ND	50.00000000	UGL
9.0	2NP	ND	50.00000000	UGL
9.0	24DCLP	ND	10.00000000	UGL
9.0	24DMPN	ND	10.00000000	UGL
9.0	24DNP	ND	50.00000000	UGL
9.0	24DNT	LT	5.39999998	UGL
9.0	245TCP	ND	50.00000000	UGL
9.0	246TCP	ND	10.00000000	UGL
9.0	26DNT	LT	5.10000002	UGL
9.0	3NANIL	ND	50.00000000	UGL
9.0	33DCBD	ND	20.00000000	UGL
9.0	4BRPPE	ND	10.00000000	UGL
9.0	4CANIL	ND	10.00000000	UGL
9.0	4CLPPE	ND	10.00000000	UGL
9.0	4CL3C	ND	10.00000000	UGL
9.0	4MP	ND	10.00000000	UGL
9.0	4NANIL	ND	50.00000000	UGL
9.0	4NP	ND	50.00000000	UGL
9.0	46DN2C	ND	50.00000000	UGL
9.0	00 OILGR	ND	5000.00000000	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-11

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
10.6	.0	.00	40.1	08/02/88	SB	HG	.64399999	UGL
			40.1		SD	AS	31.99999976	UGL
			40.1			PB	40.00000000	UGL
			40.1		SS	AG	5.56000000	UGL
			40.1			BA	406.00000000	UGL
			40.1			CD	4.08999997	UGL
			40.1			CR	37.09999990	UGL
			40.1			CU	61.39999962	UGL
			40.1			FE	87000.00000000	UGL
			40.1			MN	4100.00000000	UGL
			40.1			SE	98.59999943	UGL
			40.1			ZN	184.99999809	UGL
			40.5		TT	SO4	222.99999809	UGL
			40.1		UM	ACET	10.00000000	UGL
			40.1			BDRCLM	5.00000000	UGL
			40.1			CCL4	1.00000000	UGL
			40.1			CHBR3	3.69999999	UGL
			40.1			CHCL3	1.00000000	UGL
			40.1			CH2CL2	23.00000000	UGL
			40.1			CH3BR	10.00000000	UGL
			40.1			CH3CL	1.80000000	UGL
			40.1			CLC6H5	1.20000000	UGL
			40.1			CS2	5.00000000	UGL
			40.1			C13DCP	1.80000000	UGL
			40.1			C2AVE	10.00000000	UGL
			40.1			C2H3CL	12.99999988	UGL
			40.1			C2H5CL	6.89999998	UGL
			40.1			C6H6	1.70000000	UGL
			40.1			DBRCLM	1.80000000	UGL
			40.1			ETC6H5	1.40000001	UGL
			40.1			MEC6H5	1.80000000	UGL
			40.1			MEK	10.00000000	UGL
			40.1			MIBK	10.00000000	UGL
			40.1			MNBK	10.00000000	UGL
			40.1			STYR	5.00000000	UGL
			40.1			TCLEA	7.10000002	UGL
			40.1			TCLEE	2.30000001	UGL
			40.1			TRCLE	1.00000000	UGL
			40.1			T13DCP	1.59999999	UGL
			40.1			XYLEN	5.00000000	UGL
			40.1			11DCE	6.80000001	UGL
			40.1			11DCLE	2.69999999	UGL
			40.1			111TCE	1.00000000	UGL
			40.1			112TCE	1.70000000	UGL
			40.1			12DCE	2.19999999	UGL
			40.1			12DCLE	1.00000000	UGL
			40.1			12DCLP	3.19999999	UGL
			40.1		UM	ABHC	10.00000000	UGL

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40.1	AENSLF	ND	10.00000000	UGL
40.1	ALDRN	LT	6.30000001	UGL
40.1	ANAPNE	LT	1.30000000	UGL
40.1	ANAPYL	LT	3.69999999	UGL
40.1	ANTHRC	LT	1.09999999	UGL
40.1	BAANTR	LT	.82999999	UGL
40.1	BAPYR	LT	4.50000000	UGL
40.1	BBFANT	LT	2.40000001	UGL
40.1	BBHC	LT	3.19999999	UGL
40.1	BBZP	ND	10.00000000	UGL
40.1	BENSLF	ND	10.00000000	UGL
40.1	BENZOA	ND	50.00000000	UGL
40.1	BGHIPI	LT	38.00000000	UGL
40.1	BKFANT	LT	2.90000001	UGL
40.1	BZALC	ND	.10000000	UGL
40.1	B2CEXM	ND	10.00000000	UGL
40.1	B2CIPE	ND	10.00000000	UGL
40.1	B2CLEE	LT	1.59999999	UGL
40.1	B2EHP	LT	34.00000000	UGL
40.1	CHRY	LT	1.00000000	UGL
40.1	CLDAN	LT	12.00000000	UGL
40.1	CL6BZ	LT	2.80000001	UGL
40.1	CL6CP	ND	10.00000000	UGL
40.1	CL6ET	LT	8.20000005	UGL
40.1	DBAHA	LT	4.89999998	UGL
40.1	DBHC	LT	95.00000000	UGL
40.1	DBZFUR	ND	10.00000000	UGL
40.1	DEP	ND	10.00000000	UGL
40.1	DLDRN	LT	3.50000000	UGL
40.1	DMP	ND	10.00000000	UGL
40.1	DNBP	ND	10.00000000	UGL
40.1	DNOP	LT	17.99999976	UGL
40.1	ENDRN	LT	51.00000000	UGL
40.1	ENDRNK	ND	10.00000000	UGL
40.1	ESFS04	ND	10.00000000	UGL
40.1	FANT	LT	1.20000000	UGL
40.1	FLRENE	ND	10.00000000	UGL
40.1	HCBD	LT	6.00000000	UGL
40.1	HPLC	LT	5.30000001	UGL
40.1	HPLCE	LT	6.69999999	UGL
40.1	ICDPYR	LT	86.00000000	UGL
40.1	ISOPHR	ND	.10000000	UGL
40.1	LIN	LT	15.00000000	UGL
40.1	MEXCLR	ND	50.00000000	UGL
40.1	NAP	LT	4.00000000	UGL
40.1	NB	ND	10.00000000	UGL
40.1	NNDNPA	LT	6.69999999	UGL
40.1	NNDPA	ND	6.69999999	UGL
40.1	PCB016	ND	50.00000000	UGL
40.1	PCB221	ND	50.00000000	UGL
40.1	PCB232	ND	50.00000000	UGL
40.1	PCB242	ND	50.00000000	UGL
40.1	PCB248	ND	50.00000000	UGL
40.1	PCB254	ND	50.00000000	UGL
40.1	PCB260	ND	50.00000000	UGL
40.1	PCP	ND	50.00000000	UGL
40.1	PHANTR	LT	.84999999	UGL

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40.1	PHENOL	ND	10.00000000	UGL
40.1	PPDDD	LT	6.00000000	UGL
40.1	PPDDE	LT	12.00000000	UGL
40.1	PPDDT	LT	4.69999999	UGL
40.1	PYR	LT	12.00000000	UGL
40.1	TXPHEN	ND	50.00000000	UGL
40.1	UNK549		16.39999986	UGL
40.1	UNK569		27.89999986	UGL
40.1	12DCLB	LT	5.19999999	UGL
40.1	124TCB	LT	4.60000002	UGL
40.1	13DCLB	LT	5.50000000	UGL
40.1	14DCLB	LT	6.00000000	UGL
40.1	2CLP	ND	10.00000000	UGL
40.1	2CNAP	LT	1.70000000	UGL
40.1	2MNAP	ND	10.00000000	UGL
40.1	2MP	ND	10.00000000	UGL
40.1	2NANIL	ND	50.00000000	UGL
40.1	2NP	ND	50.00000000	UGL
40.1	24DCLP	ND	10.00000000	UGL
40.1	24DMPN	ND	10.00000000	UGL
40.1	24DNP	ND	50.00000000	UGL
40.1	24DNT	LT	5.39999998	UGL
40.1	245TCP	ND	50.00000000	UGL
40.1	246TCP	ND	10.00000000	UGL
40.1	26DNT	LT	5.10000002	UGL
40.1	3NANIL	ND	50.00000000	UGL
40.1	33DCBD	ND	20.00000000	UGL
40.1	4BRPPE	ND	10.00000000	UGL
40.1	4CANIL	ND	10.00000000	UGL
40.1	4CLPPE	ND	10.00000000	UGL
40.1	4CL3C	ND	10.00000000	UGL
40.1	4MP	ND	10.00000000	UGL
40.1	4NANIL	ND	50.00000000	UGL
40.1	4NP	ND	50.00000000	UGL
40.1	46DN2C	ND	50.00000000	UGL
40.1	OILGR		10999.99987793	UGL

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RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-12

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
15.5	.0	.00	9.5	08/04/88	SB	HG	.70199999	UGL
			9.5		SD	AS	11.09999990	UGL
			9.5			PB	14.30000007	UGL
			9.5		SS	AG	5.56000000	UGL
			9.5			BA	49.49999952	UGL
			9.5			CD	4.08999997	UGL
			9.5			CR	9.39999998	UGL
			9.5			CU	10.60000002	UGL
			9.5			FE	8600.00000000	UGL
			9.5			MN	170.00000000	UGL
			9.5			SE	98.59999943	UGL
			9.5			ZN	63.99999952	UGL
			9.5		TT	SO4	33000.00000000	UGL
			9.5		UM	ACET	8.00000000	UGL
			9.5			BDRCLM	5.00000000	UGL
			9.5			CCL4	1.00000000	UGL
			9.5			CHBR3	3.69999999	UGL
			9.5			CHCL3	1.00000000	UGL
			9.5			CH2CL2	23.00000000	UGL
			9.5			CH3BR	10.00000000	UGL
			9.5			CH3CL	1.80000000	UGL
			9.5			CLC6H5	1.20000000	UGL
			9.5			CS2	5.00000000	UGL
			9.5			C13DCP	1.80000000	UGL
			9.5			C2AVE	10.00000000	UGL
			9.5			C2H3CL	12.99999988	UGL
			9.5			C2H5CL	6.89999998	UGL
			9.5			C6H6	1.70000000	UGL
			9.5			DBRCLM	1.80000000	UGL
			9.5			ETC6H5	1.40000001	UGL
			9.5			MEC6H5	1.80000000	UGL
			9.5			MEK	10.00000000	UGL
			9.5			MIBK	10.00000000	UGL
			9.5			MNBK	10.00000000	UGL
			9.5			STYR	5.00000000	UGL
			9.5			TCLEA	7.10000002	UGL
			9.5			TCLEE	2.30000001	UGL
			9.5			TRCLE	1.00000000	UGL
			9.5			T13DCP	1.59999999	UGL
			9.5			UNK292	7.30000001	UGL
			9.5			XYLEN	5.00000000	UGL
			9.5			11DCE	6.80000001	UGL
			9.5			11DCLE	2.69999999	UGL
			9.5			111TCE	1.00000000	UGL
			9.5			112TCE	1.70000000	UGL
			9.5			12DCE	2.19999999	UGL
			9.5			12DCLE	1.00000000	UGL
			9.5			12DCLP	3.19999999	UGL

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9.5	UM	ABHC	ND	10.00000000	UGL
9.5		AENSLF	ND	10.00000000	UGL
9.5		ALDRN	LT	6.30000001	UGL
9.5		ANAPNE	LT	1.30000000	UGL
9.5		ANAPYL	LT	3.69999999	UGL
9.5		ANTHRC	LT	1.09999999	UGL
9.5		BAANTR	LT	.82999999	UGL
9.5		BAPYR	LT	4.50000000	UGL
9.5		BBFANT	LT	2.40000001	UGL
9.5		BBHC	LT	3.19999999	UGL
9.5		BBZP	ND	10.00000000	UGL
9.5		BENSLF	ND	10.00000000	UGL
9.5		BENZOA	ND	50.00000000	UGL
9.5		BGHIPY	LT	38.00000000	UGL
9.5		BKFANT	LT	2.90000001	UGL
9.5		BZALC	ND	.10000000	UGL
9.5		B2CEXM	ND	10.00000000	UGL
9.5		B2CIPE	ND	10.00000000	UGL
9.5		B2CLEE	LT	1.59999999	UGL
9.5		B2EHP	LT	34.00000000	UGL
9.5		CHRY	LT	1.00000000	UGL
9.5		CLDAN	LT	12.00000000	UGL
9.5		CL6BZ	LT	2.80000001	UGL
9.5		CL6CP	ND	10.00000000	UGL
9.5		CL6ET	LT	8.20000005	UGL
9.5		DBAHA	LT	4.89999998	UGL
9.5		DBHC	LT	95.00000000	UGL
9.5		DBZFUR	ND	10.00000000	UGL
9.5		DEP	ND	10.00000000	UGL
9.5		DLDRN	LT	3.50000000	UGL
9.5		DMP	ND	10.00000000	UGL
9.5		DNBP	ND	10.00000000	UGL
9.5		DNOP	LT	17.99999976	UGL
9.5		ENDRN	LT	51.00000000	UGL
9.5		ENDRNK	ND	10.00000000	UGL
9.5		ESFSO4	ND	10.00000000	UGL
9.5		FANT	LT	1.20000000	UGL
9.5		FLRENE	ND	10.00000000	UGL
9.5		HCBP	LT	6.00000000	UGL
9.5		HPLC	LT	5.30000001	UGL
9.5		HPLCE	LT	6.69999999	UGL
9.5		ICDPYR	LT	86.00000000	UGL
9.5		ISOPHR	ND	.10000000	UGL
9.5		LIN	LT	15.00000000	UGL
9.5		MEXCLR	ND	50.00000000	UGL
9.5		NAP	LT	4.00000000	UGL
9.5		NB	ND	10.00000000	UGL
9.5		NNDNPA	LT	6.69999999	UGL
9.5		NNDPA	ND	6.69999999	UGL
9.5		PCB016	ND	50.00000000	UGL
9.5		PCB221	ND	50.00000000	UGL
9.5		PCB232	ND	50.00000000	UGL
9.5		PCB242	ND	50.00000000	UGL
9.5		PCB248	ND	50.00000000	UGL
9.5		PCB254	ND	50.00000000	UGL
9.5		PCB260	ND	50.00000000	UGL
9.5		PCP	ND	50.00000000	UGL

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9.5	PHANTR	LT	.84999999	UGL
9.5	PHENOL	ND	10.00000000	UGL
9.5	PPDDD	LT	6.00000000	UGL
9.5	PPDDE	LT	12.00000000	UGL
9.5	PPDDT	LT	4.69999999	UGL
9.5	PYR	LT	12.00000000	UGL
9.5	TXPHEN	ND	50.00000000	UGL
9.5	UNK529		4.74000001	UGL
9.5	12DCLB	LT	5.19999999	UGL
9.5	124TCB	LT	4.60000002	UGL
9.5	13DCLB	LT	5.50000000	UGL
9.5	14DCLB	LT	6.00000000	UGL
9.5	2CLP	ND	10.00000000	UGL
9.5	2CNAP	LT	1.70000000	UGL
9.5	2MNAP	ND	10.00000000	UGL
9.5	2MP	ND	10.00000000	UGL
9.5	2NANIL	ND	50.00000000	UGL
9.5	2NP	ND	50.00000000	UGL
9.5	24DCLP	ND	10.00000000	UGL
9.5	24DMPN	ND	10.00000000	UGL
9.5	24DNP	ND	50.00000000	UGL
9.5	24DNT	LT	5.39999998	UGL
9.5	245TCP	ND	50.00000000	UGL
9.5	246TCP	ND	10.00000000	UGL
9.5	26DNT	LT	5.10000002	UGL
9.5	3NANIL	ND	50.00000000	UGL
9.5	33DCBD	ND	20.00000000	UGL
9.5	4BRPPE	ND	10.00000000	UGL
9.5	4CANIL	ND	10.00000000	UGL
9.5	4CLPPE	ND	10.00000000	UGL
9.5	4CL3C	ND	10.00000000	UGL
9.5	4MP	ND	10.00000000	UGL
9.5	4NANIL	ND	50.00000000	UGL
9.5	4NP	ND	50.00000000	UGL
9.5	46DN2C	ND	50.00000000	UGL
9.5	00 OILGR		10600.00000000	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL DM-13

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND	CONCENTRATION	UNITS
11.3	.0	.00	9.8	08/05/88	SB	HG	.73999999	UGL
			9.8		SD	AS	5.88000000	UGL
			9.8			PB	3.37000000	UGL
			9.8		SS	AG	5.56000000	UGL
			9.8			BA	60.59999990	UGL
			9.8			CD	4.08999997	UGL
			9.8			CR	4.44000000	UGL
			9.8			CU	6.19999999	UGL
			9.8			FE	10999.99987793	UGL
			9.8			MN	834.00000000	UGL
			9.8			SE	98.59999943	UGL
			9.8			ZN	87.69999981	UGL
			9.5		TT	SO4	222.99999809	UGL
			9.8		UM	ACET	10.00000000	UGL
			9.8			BDRCLM	5.00000000	UGL
			9.8			CCL4	1.00000000	UGL
			9.8			CHBR3	3.69999999	UGL
			9.8			CHCL3	1.00000000	UGL
			9.8			CH2CL2	23.00000000	UGL
			9.8			CH3BR	10.00000000	UGL
			9.8			CH3CL	1.80000000	UGL
			9.8			CLC6H5	1.20000000	UGL
			9.8			CS2	5.00000000	UGL
			9.8			C13DCP	1.80000000	UGL
			9.8			C2AVE	10.00000000	UGL
			9.8			C2H3CL	12.99999988	UGL
			9.8			C2H5CL	6.89999998	UGL
			9.8			C6H6	1.70000000	UGL
			9.8			DBRCLM	1.80000000	UGL
			9.8			ETC6H5	1.40000001	UGL
			9.8			MEC6H5	1.80000000	UGL
			9.8			MEK	10.00000000	UGL
			9.8			MIBK	10.00000000	UGL
			9.8			MNBK	10.00000000	UGL
			9.8			STYR	5.00000000	UGL
			9.8			TCLEA	7.10000002	UGL
			9.8			TCLEE	2.30000001	UGL
			9.8			TRCLE	1.00000000	UGL
			9.8			T13DCP	1.59999999	UGL
			9.8			XYLEN	5.00000000	UGL
			9.8			11DCE	6.80000001	UGL
			9.8			11DCLE	2.69999999	UGL
			9.8			111TCE	1.00000000	UGL
			9.8			112TCE	1.70000000	UGL
			9.8			12DCE	2.19999999	UGL
			9.8			12DCLE	1.00000000	UGL
			9.8			12DCLP	3.19999999	UGL
			9.8		UM	ABHC	10.00000000	UGL

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9.8	AENSLF	ND	10.00000000	UGL
9.8	ALDRN	LT	6.30000001	UGL
9.8	ANAPNE	LT	1.30000000	UGL
9.8	ANAPYL	LT	3.69999999	UGL
9.8	ANTHRC	LT	1.09999999	UGL
9.8	BAANTR	LT	.82999999	UGL
9.8	BAPYR	LT	4.50000000	UGL
9.8	BBFANT	LT	2.40000001	UGL
9.8	BBHC	LT	3.19999999	UGL
9.8	BBZP	ND	10.00000000	UGL
9.8	BENSLF	ND	10.00000000	UGL
9.8	BENZOA	ND	50.00000000	UGL
9.8	BGHIPY	LT	38.00000000	UGL
9.8	BKFANT	LT	2.90000001	UGL
9.8	BZALC	ND	.10000000	UGL
9.8	B2CEXM	ND	10.00000000	UGL
9.8	B2CIPE	ND	10.00000000	UGL
9.8	B2CLEE	LT	1.59999999	UGL
9.8	B2EHP	LT	34.00000000	UGL
9.8	CHRY	LT	1.00000000	UGL
9.8	CLDAN	LT	12.00000000	UGL
9.8	CL6BZ	LT	2.80000001	UGL
9.8	CL6CP	ND	10.00000000	UGL
9.8	CL6ET	LT	8.20000005	UGL
9.8	DBAHA	LT	4.89999998	UGL
9.8	DBHC	LT	95.00000000	UGL
9.8	DBZFUR	ND	10.00000000	UGL
9.8	DEP	ND	10.00000000	UGL
9.8	DLDRN	LT	3.50000000	UGL
9.8	DMP	ND	10.00000000	UGL
9.8	DNBP	ND	10.00000000	UGL
9.8	DNOP	LT	17.99999976	UGL
9.8	ENDRN	LT	51.00000000	UGL
9.8	ENDRNK	ND	10.00000000	UGL
9.8	ESFS04	ND	10.00000000	UGL
9.8	FANT	LT	1.20000000	UGL
9.8	FLRENE	ND	10.00000000	UGL
9.8	HCB0	LT	6.00000000	UGL
9.8	HPCL	LT	5.30000001	UGL
9.8	HPCLE	LT	6.69999999	UGL
9.8	ICDPYR	LT	86.00000000	UGL
9.8	ISOPHR	ND	.10000000	UGL
9.8	LIN	LT	15.00000000	UGL
9.8	MEXCLR	ND	50.00000000	UGL
9.8	NAP	LT	4.00000000	UGL
9.8	NB	ND	10.00000000	UGL
9.8	NNDNPA	LT	6.69999999	UGL
9.8	NNDPA	ND	6.69999999	UGL
9.8	PCB016	ND	50.00000000	UGL
9.8	PCB221	ND	50.00000000	UGL
9.8	PCB232	ND	50.00000000	UGL
9.8	PCB242	ND	50.00000000	UGL
9.8	PCB248	ND	50.00000000	UGL
9.8	PCB254	ND	50.00000000	UGL
9.8	PCB260	ND	50.00000000	UGL
9.8	PCP	ND	50.00000000	UGL
9.8	PHANTR	LT	.84999999	UGL

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9.8	PHENOL	ND	10.00000000	UGL
9.8	PPDD	LT	6.00000000	UGL
9.8	PPDE	LT	12.00000000	UGL
9.8	PPDDT	LT	4.69999999	UGL
9.8	PYR	LT	12.00000000	UGL
9.8	TXPHEN	ND	50.00000000	UGL
9.8	UNK549		9.71000004	UGL
9.8	12DCLB	LT	5.19999999	UGL
9.8	124TCB	LT	4.60000002	UGL
9.8	13DCLB	LT	5.50000000	UGL
9.8	14DCLB	LT	6.00000000	UGL
9.8	2CLP	ND	10.00000000	UGL
9.8	2CNAP	LT	1.70000000	UGL
9.8	2MNAP	ND	10.00000000	UGL
9.8	2MP	ND	10.00000000	UGL
9.8	2NANIL	ND	50.00000000	UGL
9.8	2NP	ND	50.00000000	UGL
9.8	24DCLP	ND	10.00000000	UGL
9.8	24DMPN	ND	10.00000000	UGL
9.8	24DNP	ND	50.00000000	UGL
9.8	24DNT	LT	5.39999998	UGL
9.8	245TCP	ND	50.00000000	UGL
9.8	246TCP	ND	10.00000000	UGL
9.8	26DNT	LT	5.10000002	UGL
9.8	3NANIL	ND	50.00000000	UGL
9.8	33DCBD	ND	20.00000000	UGL
9.8	4BRPPE	ND	10.00000000	UGL
9.8	4CANIL	ND	10.00000000	UGL
9.8	4CLPPE	ND	10.00000000	UGL
9.8	4CL3C	ND	10.00000000	UGL
9.8	4MP	ND	10.00000000	UGL
9.8	4NANIL	ND	50.00000000	UGL
9.8	4NP	ND	50.00000000	UGL
9.8	46DN2C	ND	50.00000000	UGL
9.8	00 OILGR		10799.99987793	UGL

RUN DATE: 22 MAR 89

BAYONNE OCEAN MARINE TERMINAL
ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED FROM WELL TRIPBLK

SURFACE ELEVATION (FEET)	MID SCREEN DEPTH (FEET)	SCREEN LENGTH (FEET)	SAMPLE DEPTH (FEET)	SAMPLE DATE	TEST METHOD NUMBER	COMPOUND		CONCENTRATION	UNITS
		.00	.0	08/03/88	UM	ACET	ND	10.00000000	UGL
			.0			ACET		12.00000000	UGL
			.0			BDRCLM	ND	5.00000000	UGL
			.0			BDRCLM	ND	5.00000000	UGL
			.0			CCL4	LT	1.00000000	UGL
			.0			CCL4	LT	1.00000000	UGL
			.0			CHBR3	LT	3.69999999	UGL
			.0			CHBR3	LT	3.69999999	UGL
			.0			CHCL3	LT	1.00000000	UGL
			.0			CHCL3	LT	1.00000000	UGL
			.0			CH2CL2	LT	23.00000000	UGL
			.0			CH2CL2	LT	23.00000000	UGL
			.0			CH3BR	ND	10.00000000	UGL
			.0			CH3BR	ND	10.00000000	UGL
			.0			CH3CL	LT	1.80000000	UGL
			.0			CH3CL	LT	1.80000000	UGL
			.0			CLC6H5	LT	1.20000000	UGL
			.0			CLC6H5	LT	1.20000000	UGL
			.0			CS2	ND	5.00000000	UGL
			.0			CS2	ND	5.00000000	UGL
			.0			C13DCP	LT	1.80000000	UGL
			.0			C13DCP	LT	1.80000000	UGL
			.0			C2AVE	ND	10.00000000	UGL
			.0			C2AVE	ND	10.00000000	UGL
			.0			C2H3CL	LT	12.99999988	UGL
			.0			C2H3CL	LT	12.99999988	UGL
			.0			C2H5CL	LT	6.89999998	UGL
			.0			C2H5CL	LT	6.89999998	UGL
			.0			C6H6	LT	1.70000000	UGL
			.0			C6H6	LT	1.70000000	UGL
			.0			DBRCLM	LT	1.80000000	UGL
			.0			DBRCLM	LT	1.80000000	UGL
			.0			ETC6H5	LT	1.40000001	UGL
			.0			ETC6H5	LT	1.40000001	UGL
			.0			MEC6H5	LT	1.80000000	UGL
			.0			MEC6H5	LT	1.80000000	UGL
			.0			MEK	ND	10.00000000	UGL
			.0			MEK	ND	10.00000000	UGL
			.0			MIBK	ND	10.00000000	UGL
			.0			MIBK	ND	10.00000000	UGL
			.0			MNBK	ND	10.00000000	UGL
			.0			MNBK	ND	10.00000000	UGL
			.0			STYR	ND	5.00000000	UGL
			.0			STYR	ND	5.00000000	UGL
			.0			TCLEA	LT	7.10000002	UGL
			.0			TCLEA	LT	7.10000002	UGL
			.0			TCLEE	LT	2.30000001	UGL
			.0			TCLEE	LT	2.30000001	UGL

TRIPBLANK

.0	TRCLE	LT	1.00000000	UGL
.0	TRCLE	LT	1.00000000	UGL
.0	T13DCP	LT	1.59999999	UGL
.0	T13DCP	LT	1.59999999	UGL
.0	UNK292		73.00000000	UGL
.0	UNK293		4.39999998	UGL
.0	UNK294		41.99999952	UGL
.0	XYLEN	ND	5.00000000	UGL
.0	XYLEN	ND	5.00000000	UGL
.0	11DCE	LT	6.80000001	UGL
.0	11DCE	LT	6.80000001	UGL
.0	11DCLE	LT	2.69999999	UGL
.0	11DCLE	LT	2.69999999	UGL
.0	111TCE	LT	1.00000000	UGL
.0	111TCE	LT	1.00000000	UGL
.0	112TCE	LT	1.70000000	UGL
.0	112TCE	LT	1.70000000	UGL
.0	12DCE	LT	2.19999999	UGL
.0	12DCE	LT	2.19999999	UGL
.0	12DCLE	LT	1.00000000	UGL
.0	12DCLE	LT	1.00000000	UGL
.0	12DCLP	LT	3.19999999	UGL
.0	12DCLP	LT	3.19999999	UGL
.0	ACET	ND	10.00000000	UGL
.0	BDRCLM	ND	5.00000000	UGL
.0	CCL4	LT	1.00000000	UGL
.0	CHBR3	LT	3.69999999	UGL
.0	CHCL3	LT	1.00000000	UGL
.0	CH2CL2	LT	23.00000000	UGL
.0	CH3BR	ND	10.00000000	UGL
.0	CH3CL	LT	1.80000000	UGL
.0	CLC6H5	LT	1.20000000	UGL
.0	CS2	ND	5.00000000	UGL
.0	C13DCP	LT	1.80000000	UGL
.0	C2AVE	ND	10.00000000	UGL
.0	C2H3CL	LT	12.99999988	UGL
.0	C2H5CL	LT	6.89999998	UGL
.0	C6H6	LT	1.70000000	UGL
.0	DBRCLM	LT	1.80000000	UGL
.0	ETC6H5	LT	1.40000001	UGL
.0	MEC6H5	LT	1.80000000	UGL
.0	MEK	ND	10.00000000	UGL
.0	MIBK	ND	10.00000000	UGL
.0	MNBK	ND	10.00000000	UGL
.0	STYR	ND	5.00000000	UGL
.0	TCLEA	LT	7.10000002	UGL
.0	TCLEE	LT	2.30000001	UGL
.0	TRCLE	LT	1.00000000	UGL
.0	T13DCP	LT	1.59999999	UGL
.0	XYLEN	ND	5.00000000	UGL
.0	11DCE	LT	6.80000001	UGL
.0	11DCLE	LT	2.69999999	UGL
.0	111TCE	LT	1.00000000	UGL
.0	112TCE	LT	1.70000000	UGL
.0	12DCE	LT	2.19999999	UGL
.0	12DCLE	LT	1.00000000	UGL
.0	12DCLP	LT	3.19999999	UGL

08/05/88

II. Surface Water Samples

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : STWA
SITE ID : 1SW1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	SB10	.8	LT	.1000	UGL	
			AS	SD11	.8	LT	2.9200	UGL	
			PB		.8		10.2000	UGL	
			AG	SS06	.8	LT	5.5600	UGL	
			BA		.8		31.7000	UGL	
			CD		.8	LT	4.0900	UGL	
			CR		.8		12.3000	UGL	
			CU		.8		17.6000	UGL	
			FE		.8		429.0000	UGL	
			MN		.8		127.0000	UGL	
			SE		.8	LT	98.6000	UGL	
			ZN		.8		81.3000	UGL	
			SO4	TT06	.8		10999.9999	UGL	
			ACET	UM12	.8	ND	10.0000	UGL	R
			BRDCLM		.8		15.0000	UGL	S
			CCL4		.8	LT	1.0000	UGL	
			CHBR3		.8	LT	3.7000	UGL	
			CHCL3		.8	LT	1.0000	UGL	
			CH2CL2		.8		36.1000	UGL	
			CH3BR		.8	ND	10.0000	UGL	R
			CH3CL		.8		33.8000	UGL	
			CLC6H5		.8	LT	1.2000	UGL	
			CS2		.8	ND	5.0000	UGL	R
			C13DCP		.8	LT	1.8000	UGL	
			C2AVE		.8	ND	10.0000	UGL	R
			C2H3CL		.8	LT	13.0000	UGL	
			C2H5CL		.8	LT	6.9000	UGL	
			C6H6		.8	LT	1.7000	UGL	
			DBRCLM		.8	LT	1.8000	UGL	
			ETC6H5		.8	LT	1.4000	UGL	
			MEC6H5		.8	LT	1.8000	UGL	
			MEK		.8	ND	10.0000	UGL	R
			MIBK		.8	ND	10.0000	UGL	R
			MNBK		.8	ND	10.0000	UGL	R
			STYR		.8	ND	5.0000	UGL	R
			TCLEA		.8	LT	7.1000	UGL	
			TCLEE		.8	LT	2.3000	UGL	
			TRCLE		.8	LT	1.0000	UGL	
			T13DCP		.8	LT	1.6000	UGL	
			XYLEN		.8	ND	5.0000	UGL	R
			11DCE		.8	LT	6.8000	UGL	
			11DCLE		.8	LT	2.7000	UGL	
			111TCE		.8	LT	1.0000	UGL	
			112TCE		.8	LT	1.7000	UGL	
			12DCE		.8	LT	2.2000	UGL	
			12DCLE		.8	LT	1.0000	UGL	

ISWI

12DCLP		.8	LT	3.2000	UGL	
ABHC	UM13	7.8	ND	3.0000	UGL	R
AENSLF		7.8	ND	3.0000	UGL	R
ALDRN		7.8	LT	6.3000	UGL	
ANAPNE		7.8	LT	1.3000	UGL	
ANAPYL		7.8	LT	3.7000	UGL	
ANTHRC		7.8	LT	1.1000	UGL	
BAANTR		7.8	LT	.8300	UGL	
BAPYR		7.8	LT	4.5000	UGL	
BBFANT		7.8	LT	2.4000	UGL	
BBHC		7.8	LT	3.2000	UGL	
BBZP		7.8	ND	10.0000	UGL	R
BENSLF		7.8	ND	6.0000	UGL	R
BENZOA		7.8	ND	50.0000	UGL	R
BGHIPI		7.8	LT	38.0000	UGL	
BKFANT		7.8	LT	2.9000	UGL	
BZALC		7.8	ND	.1000	UGL	R
B2CEXM		7.8	ND	10.0000	UGL	R
B2CIPE		7.8	ND	10.0000	UGL	R
B2CLEE		7.8	LT	1.6000	UGL	
B2EHP		7.8	LT	34.0000	UGL	
CHRY		7.8	LT	1.0000	UGL	
CLDAN		7.8	LT	12.0000	UGL	
CL6BZ		7.8	LT	2.8000	UGL	
CL6CP		7.8	ND	10.0000	UGL	R
CL6ET		7.8	LT	8.2000	UGL	
DBAHA		7.8	LT	4.9000	UGL	
DBHC		7.8	LT	95.0000	UGL	
DBZFUR		7.8	ND	10.0000	UGL	R
DEP		7.8	ND	10.0000	UGL	R
DLDRN		7.8	LT	3.5000	UGL	
DMP		7.8	ND	10.0000	UGL	R
DNBP		7.8	ND	10.0000	UGL	R
DNOP		7.8	LT	18.0000	UGL	
ENDRN		7.8	LT	51.0000	UGL	
ENDRNK		7.8	ND	6.0000	UGL	R
ESFSO4		7.8	ND	6.0000	UGL	R
FANT		7.8	LT	1.2000	UGL	
FLRENE		7.8	ND	10.0000	UGL	R
HCB0		7.8	LT	6.0000	UGL	
HPCL		7.8	LT	5.3000	UGL	
HPCLE		7.8	LT	6.7000	UGL	
ICDPYR		7.8	LT	86.0000	UGL	
ISOPHR		7.8	ND	.1000	UGL	R
LIN		7.8	LT	15.0000	UGL	
MEXCLR		7.8	ND	30.0000	UGL	R
NAP		7.8	LT	4.0000	UGL	
NB		7.8	ND	10.0000	UGL	R
NNDNPA		7.8	LT	6.7000	UGL	
NNDPA		7.8	ND	6.7000	UGL	R
PCB016		7.8	ND	30.0000	UGL	R
PCB221		7.8	ND	30.0000	UGL	R
PCB232		7.8	ND	30.0000	UGL	R
PCB242		7.8	ND	30.0000	UGL	R
PCB248		7.8	ND	30.0000	UGL	R
PCB254		7.8	ND	60.0000	UGL	R
PCB260		7.8	ND	60.0000	UGL	R

ISWI

PCP	7.8	ND	50.0000	UGL	R
PHANTR	7.8	LT	.8500	UGL	
PHENOL	7.8	ND	10.0000	UGL	R
PPDD	7.8	LT	6.0000	UGL	
PPDDE	7.8	LT	12.0000	UGL	
PPDDT	7.8	LT	4.7000	UGL	
PYR	7.8	LT	12.0000	UGL	
TXPHEN	7.8	ND	60.0000	UGL	R
UNK527	7.8		5.9600	UGL	
UNK551	7.8		4.6700	UGL	
12DCLB	7.8	LT	5.2000	UGL	
124TCB	7.8	LT	4.6000	UGL	
13DCLB	7.8	LT	5.5000	UGL	
14DCLB	7.8	LT	6.0000	UGL	
2CLP	7.8	ND	10.0000	UGL	R
2CNAP	7.8	LT	1.7000	UGL	
2MNAP	7.8	ND	10.0000	UGL	R
2MP	7.8	ND	10.0000	UGL	R
2NANIL	7.8	ND	50.0000	UGL	R
2NP	7.8	ND	50.0000	UGL	R
24DCLP	7.8	ND	10.0000	UGL	R
24DMPN	7.8	ND	10.0000	UGL	R
24DNP	7.8	ND	50.0000	UGL	R
24DNT	7.8	LT	5.4000	UGL	
245TCP	7.8	ND	50.0000	UGL	R
246TCP	7.8	ND	10.0000	UGL	R
26DNT	7.8	LT	5.1000	UGL	
3NANIL	7.8	ND	50.0000	UGL	R
33DCBD	7.8	ND	20.0000	UGL	R
4BRPPE	7.8	ND	10.0000	UGL	R
4CANIL	7.8	ND	10.0000	UGL	R
4CLPPE	7.8	ND	10.0000	UGL	R
4CL3C	7.8	ND	10.0000	UGL	R
4MP	7.8	ND	10.0000	UGL	R
4NANIL	7.8	ND	50.0000	UGL	R
4NP	7.8	ND	50.0000	UGL	R
46DN2C	7.8	ND	50.0000	UGL	R
0ILGR	00	ND	5000.0000	UGL	R

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : STWA
SITE ID : 1SW2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	SB10	.5	LT	.1000	UGL	
			AS	SD11	.5		19.9000	UGL	
			PB		.5		12.5000	UGL	
			AG	SS06	.5	LT	5.5600	UGL	
			BA		.5		410.0000	UGL	
			CD		.5	LT	4.0900	UGL	
			CR		.5	LT	4.4400	UGL	
			CU		.5		22.8000	UGL	
			FE		.5		63000.0000	UGL	
			MN		.5		1330.0000	UGL	
			SE		.5	LT	98.6000	UGL	
			ZN		.5		115.0000	UGL	
			SO4	TT06	.5		490.0000	UGL	
			ACET	UM12	.5	ND	10.0000	UGL	R
			BRDCLM		.5	ND	5.0000	UGL	R
			CCL4		.5	LT	1.0000	UGL	
			CHBR3		.5	LT	3.7000	UGL	
			CHCL3		.5	LT	1.0000	UGL	
			CH2CL2		.5	LT	23.0000	UGL	
			CH3BR		.5	ND	10.0000	UGL	R
			CH3CL		.5	LT	1.8000	UGL	
			CLC6H5		.5	LT	1.2000	UGL	
			CS2		.5	ND	5.0000	UGL	R
			C13DCP		.5	LT	1.8000	UGL	
			C2AVE		.5	ND	10.0000	UGL	R
			C2H3CL		.5	LT	13.0000	UGL	
			C2H5CL		.5	LT	6.9000	UGL	
			C6H6		.5	LT	1.7000	UGL	
			DBRCLM		.5	LT	1.8000	UGL	
			ETC6H5		.5	LT	1.4000	UGL	
			MEC6H5		.5	LT	1.8000	UGL	
			MEK		.5	ND	10.0000	UGL	R
			MIBK		.5	ND	10.0000	UGL	R
			MNBK		.5	ND	10.0000	UGL	R
			STYR		.5	ND	5.0000	UGL	R
			TCLEA		.5	LT	7.1000	UGL	
			TCLEE		.5	LT	2.3000	UGL	
			TRCLE		.5	LT	1.0000	UGL	
			T13DCP		.5	LT	1.6000	UGL	
			XYLEN		.5	ND	5.0000	UGL	R
			11DCE		.5	LT	6.8000	UGL	
			11DCLE		.5	LT	2.7000	UGL	
			111TCE		.5	LT	1.0000	UGL	
			112TCE		.5	LT	1.7000	UGL	
			12DCE		.5	LT	2.2000	UGL	
			12DCLE		.5	LT	1.0000	UGL	

ISW 2

12DCLP	.5	LT	3.2000	UGL	
ABHC	4.9	ND	10.0000	UGL	R
AENSLF	4.9	ND	10.0000	UGL	R
ALDRN	4.9	LT	6.3000	UGL	
ANAPNE	4.9	LT	1.3000	UGL	
ANAPYL	4.9	LT	3.7000	UGL	
ANTHRC	4.9	LT	1.1000	UGL	
BAANTR	4.9	LT	.8300	UGL	
BAPYR	4.9	LT	4.5000	UGL	
BBFANT	4.9	LT	2.4000	UGL	
BBHC	4.9	LT	3.2000	UGL	
BBZP	4.9	ND	10.0000	UGL	R
BENSLF	4.9	ND	10.0000	UGL	R
BENZOA	4.9	ND	50.0000	UGL	R
BGHIPY	4.9	LT	38.0000	UGL	
BKFANT	4.9	LT	2.9000	UGL	
BZALC	4.9	ND	.1000	UGL	R
B2CEXM	4.9	ND	10.0000	UGL	R
B2CIPE	4.9	ND	10.0000	UGL	R
B2CLEE	4.9	LT	1.6000	UGL	
B2EHP	4.9	LT	34.0000	UGL	
CHRY	4.9	LT	1.0000	UGL	
CLDAN	4.9	LT	12.0000	UGL	
CL6BZ	4.9	LT	2.8000	UGL	
CL6CP	4.9	ND	10.0000	UGL	R
CL6ET	4.9	LT	8.2000	UGL	
DBAHA	4.9	LT	4.9000	UGL	
DBHC	4.9	LT	95.0000	UGL	
DBZFUR	4.9	ND	10.0000	UGL	R
DEP	4.9	ND	10.0000	UGL	R
DLDNR	4.9	LT	3.5000	UGL	
DMP	4.9	ND	10.0000	UGL	R
DNBP	4.9	ND	10.0000	UGL	R
DNOP	4.9	LT	18.0000	UGL	
ENDRN	4.9	LT	51.0000	UGL	
ENDRNK	4.9	ND	10.0000	UGL	R
ESFSO4	4.9	ND	10.0000	UGL	R
FANT	4.9	LT	1.2000	UGL	
FLRENE	4.9	ND	10.0000	UGL	R
HCBD	4.9	LT	6.0000	UGL	
HPCL	4.9	LT	5.3000	UGL	
HPCLE	4.9	LT	6.7000	UGL	
ICDPYR	4.9	LT	86.0000	UGL	
ISOPHR	4.9	ND	.1000	UGL	R
LIN	4.9	LT	15.0000	UGL	
MEXCLR	4.9	ND	50.0000	UGL	R
NAP	4.9	LT	4.0000	UGL	
NB	4.9	ND	10.0000	UGL	R
NNDNPA	4.9	LT	6.7000	UGL	
NNDPA	4.9	ND	6.7000	UGL	R
PCB016	4.9	ND	50.0000	UGL	R
PCB221	4.9	ND	50.0000	UGL	R
PCB232	4.9	ND	50.0000	UGL	R
PCB242	4.9	ND	50.0000	UGL	R
PCB248	4.9	ND	50.0000	UGL	R
PCB254	4.9	ND	50.0000	UGL	R
PCB260	4.9	ND	50.0000	UGL	R

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ISW2

PCP	4.9	ND	50.0000	UGL	R
PHANTR	4.9	LT	.8500	UGL	
PHENDL	4.9	ND	10.0000	UGL	R
PPDDD	4.9	LT	6.0000	UGL	
PPDDE	4.9	LT	12.0000	UGL	
PPDDT	4.9	LT	4.7000	UGL	
PYR	4.9	LT	12.0000	UGL	
TXPHEN	4.9	ND	50.0000	UGL	R
UNK527	4.9		5.0400	UGL	
UNK532	4.9		18.9000	UGL	
UNK535	4.9		21.6000	UGL	
UNK551	4.9		6.2200	UGL	
UNK638	4.9		4.1700	UGL	
UNK673	4.9		6.8400	UGL	
UNK674	4.9		9.5500	UGL	
UNK688	4.9		9.2800	UGL	
UNK708	4.9		9.2300	UGL	
12DCLB	4.9	LT	5.2000	UGL	
124TCB	4.9	LT	4.6000	UGL	
13DCLB	4.9	LT	5.5000	UGL	
14DCLB	4.9	LT	6.0000	UGL	
2CLP	4.9	ND	10.0000	UGL	R
2CNAP	4.9	LT	1.7000	UGL	
2MNAP	4.9	ND	10.0000	UGL	R
2MP	4.9	ND	10.0000	UGL	R
2NANIL	4.9	ND	50.0000	UGL	R
2NP	4.9	ND	50.0000	UGL	R
24DCLP	4.9	ND	10.0000	UGL	R
24DMPN	4.9	ND	10.0000	UGL	R
24DNP	4.9	ND	50.0000	UGL	R
24DNT	4.9	LT	5.4000	UGL	
245TCP	4.9	ND	50.0000	UGL	R
246TCP	4.9	ND	10.0000	UGL	R
26DNT	4.9	LT	5.1000	UGL	
3NANIL	4.9	ND	50.0000	UGL	R
33DCBD	4.9	ND	20.0000	UGL	R
4BRPPE	4.9	ND	10.0000	UGL	R
4CANIL	4.9	ND	10.0000	UGL	R
4CLPPE	4.9	ND	10.0000	UGL	R
4CL3C	4.9	ND	10.0000	UGL	R
4MP	4.9	ND	10.0000	UGL	R
4NANIL	4.9	ND	50.0000	UGL	R
4NP	4.9	ND	50.0000	UGL	R
46DN2C	4.9	ND	50.0000	UGL	R
OILGR	00	.5	9200.0000	UGL	

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : SPRG
SITE ID : 1SW3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	SB10	.8		.7600	UGL	
			HG		.8		.2210	UGL	
			AS	SD11	.8		5.9700	UGL	
			AS		.8		10.8000	UGL	
			PB		.8		130.0000	UGL	
			PB		.8		31.0000	UGL	
			AG	SS06	.8	LT	5.5600	UGL	
			AG		.8	LT	5.5600	UGL	
			BA		.8		981.0000	UGL	
			BA		.8		533.0000	UGL	
			CD		.8	LT	4.0900	UGL	
			CD		.8	LT	4.0900	UGL	
			CR		.8	LT	4.4400	UGL	
			CR		.8	LT	4.4400	UGL	
			CU		.8		128.0000	UGL	
			CU		.8		38.9000	UGL	
			FE		.8		190000.0000	UGL	
			FE		.8		87999.9990	UGL	
			MN		.8		1090.0000	UGL	
			MN		.8		873.0000	UGL	
			SE		.8	LT	98.6000	UGL	
			SE		.8	LT	98.6000	UGL	
			ZN		.8		432.0000	UGL	
			ZN		.8		159.0000	UGL	
			SO4	TT06	.8		216.0000	UGL	
			SO4		.8		267.0000	UGL	
			ACET	UM12	.8	ND	10.0000	UGL	R
			ACET		.8	ND	10.0000	UGL	R
			BRDCLM		.8	ND	5.0000	UGL	R
			BRDCLM		.8	ND	5.0000	UGL	R
			CCL4		.8	LT	1.0000	UGL	D
			CCL4		.8	LT	1.0000	UGL	
			CHBR3		.8	LT	3.7000	UGL	
			CHBR3		.8	LT	3.7000	UGL	D
			CHCL3		.8	LT	1.0000	UGL	D
			CHCL3		.8	LT	1.0000	UGL	
			CH2CL2		.8	LT	23.0000	UGL	D
			CH2CL2		.8	LT	23.0000	UGL	
			CH3BR		.8	ND	10.0000	UGL	R
			CH3BR		.8	ND	10.0000	UGL	R
			CH3CL		.8	LT	1.8000	UGL	D
			CH3CL		.8	LT	1.8000	UGL	
			CLC6H5		.8	LT	1.2000	UGL	D
			CLC6H5		.8	LT	1.2000	UGL	
			CS2		.8	ND	5.0000	UGL	R
			CS2		.8	ND	5.0000	UGL	R

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ISW3

C13DCP	.8	LT	1.8000	UGL	D
C13DCP	.8	LT	1.8000	UGL	
C2AVE	.8	ND	10.0000	UGL	R
C2AVE	.8	ND	10.0000	UGL	R
C2H3CL	.8	LT	13.0000	UGL	
C2H3CL	.8	LT	13.0000	UGL	D
C2H5CL	.8	LT	6.9000	UGL	
C2H5CL	.8	LT	6.9000	UGL	D
C6H6	.8	LT	1.7000	UGL	
C6H6	.8	LT	1.7000	UGL	D
DBRCLM	.8	LT	1.8000	UGL	
DBRCLM	.8	LT	1.8000	UGL	D
ETC6H5	.8	LT	1.4000	UGL	
ETC6H5	.8	LT	1.4000	UGL	D
MEC6H5	.8	LT	1.8000	UGL	
MEC6H5	.8	LT	1.8000	UGL	D
MEK	.8	ND	10.0000	UGL	R
MEK	.8	ND	10.0000	UGL	R
MIBK	.8	ND	10.0000	UGL	R
MIBK	.8	ND	10.0000	UGL	R
MNBK	.8	ND	10.0000	UGL	R
MNBK	.8	ND	10.0000	UGL	R
STYR	.8	ND	5.0000	UGL	R
STYR	.8	ND	5.0000	UGL	R
TCLEA	.8	LT	7.1000	UGL	D
TCLEA	.8	LT	7.1000	UGL	
TCLEE	.8	LT	2.3000	UGL	D
TCLEE	.8	LT	2.3000	UGL	
TRCLE	.8	LT	1.0000	UGL	
TRCLE	.8	LT	1.0000	UGL	D
T13DCP	.8	LT	1.6000	UGL	
T13DCP	.8	LT	1.6000	UGL	D
XYLEN	.8	ND	5.0000	UGL	R
XYLEN	.8	ND	5.0000	UGL	R
11DCE	.8	LT	6.8000	UGL	
11DCE	.8	LT	6.8000	UGL	D
11DCLE	.8	LT	2.7000	UGL	D
11DCLE	.8	LT	2.7000	UGL	
111TCE	.8	LT	1.0000	UGL	
111TCE	.8	LT	1.0000	UGL	D
112TCE	.8	LT	1.7000	UGL	
112TCE	.8	LT	1.7000	UGL	D
12DCE	.8	LT	2.2000	UGL	
12DCE	.8	LT	2.2000	UGL	D
12DCLE	.8	LT	1.0000	UGL	D
12DCLE	.8	LT	1.0000	UGL	
12DCLP	.8	LT	3.2000	UGL	
12DCLP	.8	LT	3.2000	UGL	D
ABHC	UM13 7.8	ND	10.0000	UGL	R
ABHC	7.8	ND	10.0000	UGL	R
AENSLF	7.8	ND	10.0000	UGL	R
AENSLF	7.8	ND	10.0000	UGL	R
ALDRN	7.8	LT	6.3000	UGL	
ALDRN	7.8	LT	6.3000	UGL	
ANAPNE	7.8		13.9000	UGL	
ANAPNE	7.8		11.1000	UGL	
ANAPYL	7.8	LT	3.7000	UGL	

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ANAPYL	7.8	LT	3.7000	UGL	
ANTHRC	7.8	LT	1.1000	UGL	
ANTHRC	7.8	LT	1.1000	UGL	
BAANTR	7.8	LT	.8300	UGL	
BAANTR	7.8	LT	.8300	UGL	
BAPYR	7.8	LT	4.5000	UGL	
BAPYR	7.8	LT	4.5000	UGL	
BBFANT	7.8	LT	2.4000	UGL	
BBFANT	7.8	LT	2.4000	UGL	
BBHC	7.8	LT	3.2000	UGL	
BBHC	7.8	LT	3.2000	UGL	
BBZP	7.8	ND	10.0000	UGL	R
BBZP	7.8	ND	10.0000	UGL	R
BENSLF	7.8	ND	10.0000	UGL	R
BENSLF	7.8	ND	10.0000	UGL	R
BENZOA	7.8	ND	50.0000	UGL	R
BENZOA	7.8	ND	50.0000	UGL	R
BGHIPY	7.8	LT	38.0000	UGL	
BGHIPY	7.8	LT	38.0000	UGL	
BKFANT	7.8	LT	2.9000	UGL	
BKFANT	7.8	LT	2.9000	UGL	
BZALC	7.8	ND	.1000	UGL	R
BZALC	7.8	ND	.1000	UGL	R
B2CEXM	7.8	ND	10.0000	UGL	R
B2CEXM	7.8	ND	10.0000	UGL	R
B2CIPE	7.8	ND	10.0000	UGL	R
B2CIPE	7.8	ND	10.0000	UGL	R
B2CLEE	7.8	LT	1.6000	UGL	
B2CLEE	7.8	LT	1.6000	UGL	
B2EHP	7.8	LT	34.0000	UGL	
B2EHP	7.8	LT	34.0000	UGL	
CHRY	7.8	LT	1.0000	UGL	
CHRY	7.8	LT	1.0000	UGL	
CLDAN	7.8	LT	12.0000	UGL	
CLDAN	7.8	LT	12.0000	UGL	
CL6BZ	7.8	LT	2.8000	UGL	
CL6BZ	7.8	LT	2.8000	UGL	
CL6CP	7.8	ND	10.0000	UGL	R
CL6CP	7.8	ND	10.0000	UGL	R
CL6ET	7.8	LT	8.2000	UGL	
CL6ET	7.8	LT	8.2000	UGL	
DBAHA	7.8	LT	4.9000	UGL	
DBAHA	7.8	LT	4.9000	UGL	
DBHC	7.8	LT	95.0000	UGL	
DBHC	7.8	LT	95.0000	UGL	
DBZFUR	7.8		5.0000	UGL	S
DBZFUR	7.8		4.0000	UGL	S
DEP	7.8	ND	10.0000	UGL	R
DEP	7.8	ND	10.0000	UGL	R
DLDRN	7.8	LT	3.5000	UGL	
DLDRN	7.8	LT	3.5000	UGL	
DMP	7.8	ND	10.0000	UGL	R
DMP	7.8	ND	10.0000	UGL	R
DNBP	7.8	ND	10.0000	UGL	R
DNBP	7.8	ND	10.0000	UGL	R
DNOP	7.8	LT	18.0000	UGL	
DNOP	7.8	LT	18.0000	UGL	

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ENDRN	7.8	LT	51.0000	UGL	
ENDRN	7.8	LT	51.0000	UGL	
ENDRNK	7.8	ND	10.0000	UGL	R
ENDRNK	7.8	ND	10.0000	UGL	R
ESFS04	7.8	ND	10.0000	UGL	R
ESFS04	7.8	ND	10.0000	UGL	R
FANT	7.8	LT	1.2000	UGL	
FANT	7.8	LT	1.2000	UGL	
FLRENE	7.8		7.0000	UGL	S
FLRENE	7.8	ND	10.0000	UGL	R
HCB	7.8	LT	6.0000	UGL	
HCB	7.8	LT	6.0000	UGL	
HPCL	7.8	LT	5.3000	UGL	
HPCL	7.8	LT	5.3000	UGL	
HPCLE	7.8	LT	6.7000	UGL	
HPCLE	7.8	LT	6.7000	UGL	
ICDPYR	7.8	LT	86.0000	UGL	
ICDPYR	7.8	LT	86.0000	UGL	
ISOPHR	7.8	ND	.1000	UGL	R
ISOPHR	7.8	ND	.1000	UGL	R
LIN	7.8	LT	15.0000	UGL	
LIN	7.8	LT	15.0000	UGL	
MEXCLR	7.8	ND	50.0000	UGL	R
MEXCLR	7.8	ND	50.0000	UGL	R
NAP	7.8		4.8500	UGL	
NAP	7.8		4.4200	UGL	
NB	7.8	ND	10.0000	UGL	R
NB	7.8	ND	10.0000	UGL	R
NNDNPA	7.8	LT	6.7000	UGL	
NNDNPA	7.8	LT	6.7000	UGL	
NNDPA	7.8	ND	6.7000	UGL	R
NNDPA	7.8	ND	6.7000	UGL	R
PCB016	7.8	ND	50.0000	UGL	R
PCB016	7.8	ND	50.0000	UGL	R
PCB221	7.8	ND	50.0000	UGL	R
PCB221	7.8	ND	50.0000	UGL	R
PCB232	7.8	ND	50.0000	UGL	R
PCB232	7.8	ND	50.0000	UGL	R
PCB242	7.8	ND	50.0000	UGL	R
PCB242	7.8	ND	50.0000	UGL	R
PCB248	7.8	ND	50.0000	UGL	R
PCB248	7.8	ND	50.0000	UGL	R
PCB254	7.8	ND	50.0000	UGL	R
PCB254	7.8	ND	50.0000	UGL	R
PCB260	7.8	ND	50.0000	UGL	R
PCB260	7.8	ND	50.0000	UGL	R
PCP	7.8	ND	50.0000	UGL	R
PCP	7.8	ND	50.0000	UGL	R
PHANTR	7.8	LT	.8500	UGL	
PHANTR	7.8	LT	.8500	UGL	
PHENOL	7.8	ND	10.0000	UGL	R
PHENOL	7.8	ND	10.0000	UGL	R
PPDDD	7.8	LT	6.0000	UGL	
PPDDD	7.8	LT	6.0000	UGL	
PPDDE	7.8	LT	12.0000	UGL	
PPDDE	7.8	LT	12.0000	UGL	
PPDDT	7.8	LT	4.7000	UGL	

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PPDDT	7.8	LT	4.7000	UGL	
PYR	7.8	LT	12.0000	UGL	
PYR	7.8	LT	12.0000	UGL	
TXPHEN	7.8	ND	50.0000	UGL	R
TXPHEN	7.8	ND	50.0000	UGL	R
UNK538	7.8		4.6800	UGL	
UNK550	7.8		13.7000	UGL	
UNK551	7.8		5.7400	UGL	
UNK572	7.8		13.2000	UGL	
UNK572	7.8		9.8100	UGL	D
UNK590	7.8		4.5300	UGL	
UNK594	7.8		12.4000	UGL	
UNK595	7.8		9.9600	UGL	
UNK701	7.8		14.2000	UGL	
UNK708	7.8		10.9000	UGL	
UNK718	7.8		10.1000	UGL	
12DCLB	7.8	LT	5.2000	UGL	
12DCLB	7.8	LT	5.2000	UGL	
124TCB	7.8	LT	4.6000	UGL	
124TCB	7.8	LT	4.6000	UGL	
13DCLB	7.8	LT	5.5000	UGL	
13DCLB	7.8	LT	5.5000	UGL	
14DCLB	7.8	LT	6.0000	UGL	
14DCLB	7.8	LT	6.0000	UGL	
2CLP	7.8	ND	10.0000	UGL	R
2CLP	7.8	ND	10.0000	UGL	R
2CNAP	7.8	LT	1.7000	UGL	
2CNAP	7.8	LT	1.7000	UGL	
2MNAP	7.8	ND	10.0000	UGL	R
2MNAP	7.8	ND	10.0000	UGL	R
2MP	7.8		37.0000	UGL	S
2MP	7.8	ND	10.0000	UGL	R
2NANIL	7.8	ND	50.0000	UGL	R
2NANIL	7.8	ND	50.0000	UGL	R
2NP	7.8	ND	50.0000	UGL	R
2NP	7.8	ND	50.0000	UGL	R
24DCLP	7.8	ND	10.0000	UGL	R
24DCLP	7.8	ND	10.0000	UGL	R
24DMPN	7.8	ND	10.0000	UGL	R
24DMPN	7.8	ND	10.0000	UGL	R
24DNP	7.8	ND	50.0000	UGL	R
24DNP	7.8	ND	50.0000	UGL	R
24DNT	7.8	LT	5.4000	UGL	
24DNT	7.8	LT	5.4000	UGL	
245TCP	7.8	ND	50.0000	UGL	R
245TCP	7.8	ND	50.0000	UGL	R
246TCP	7.8	ND	10.0000	UGL	R
246TCP	7.8	ND	10.0000	UGL	R
26DNT	7.8	LT	5.1000	UGL	
26DNT	7.8	LT	5.1000	UGL	
3NANIL	7.8	ND	50.0000	UGL	R
3NANIL	7.8	ND	50.0000	UGL	R
33DCBD	7.8	ND	20.0000	UGL	R
33DCBD	7.8	ND	20.0000	UGL	R
4BRPPE	7.8	ND	10.0000	UGL	R
4BRPPE	7.8	ND	10.0000	UGL	R
4CANIL	7.8	ND	10.0000	UGL	R

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4CANIL	7.8	ND	10.0000	UGL	R
4CLPPE	7.8		6.0000	UGL	S
4CLPPE	7.8	ND	10.0000	UGL	R
4CL3C	7.8	ND	10.0000	UGL	R
4CL3C	7.8	ND	10.0000	UGL	R
4MP	7.8	ND	10.0000	UGL	R
4MP	7.8	ND	10.0000	UGL	R
4NANIL	7.8	ND	50.0000	UGL	R
4NANIL	7.8	ND	50.0000	UGL	R
4NP	7.8	ND	50.0000	UGL	R
4NP	7.8	ND	50.0000	UGL	R
46DN2C	7.8	ND	50.0000	UGL	R
46DN2C	7.8	ND	50.0000	UGL	R
OILGR	.8		9000.0000	UGL	
OILGR	.8		48899.9995	UGL	

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RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : STSW
SITE ID : 1SW4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	SB10	2.0	LT	.1000	UGL	
			AS	SD11	2.0		6.2100	UGL	
			PB		2.0		2.4000	UGL	
			AG	SS06	2.0	LT	5.5600	UGL	
			BA		2.0		15.9000	UGL	
			CD		2.0	LT	4.0900	UGL	
			CR		2.0	LT	4.4400	UGL	
			CU		2.0	LT	6.2000	UGL	
			FE		2.0		576.0000	UGL	
			MN		2.0		64.2000	UGL	
			SE		2.0	LT	98.6000	UGL	
			ZN		2.0		23.6000	UGL	
			SO4	TTO6	2.0		610000.0000	UGL	
			ACET	UM12	2.0		150.0000	UGL	S
			BRDCLM		2.0	ND	5.0000	UGL	R
			CCL4		2.0	LT	1.0000	UGL	
			CHBR3		2.0	LT	3.7000	UGL	
			CHCL3		2.0	LT	1.0000	UGL	
			CH2CL2		2.0	LT	23.0000	UGL	
			CH3BR		2.0	ND	10.0000	UGL	R
			CH3CL		2.0	LT	1.8000	UGL	
			CLC6H5		2.0	LT	1.2000	UGL	
			CS2		2.0	ND	5.0000	UGL	R
			C13DCP		2.0	LT	1.8000	UGL	
			C2AVE		2.0	ND	10.0000	UGL	R
			C2H3CL		2.0	LT	13.0000	UGL	
			C2H5CL		2.0	LT	6.9000	UGL	
			C6H6		2.0	LT	1.7000	UGL	
			DBRCLM		2.0	LT	1.8000	UGL	
			ETC6H5		2.0	LT	1.4000	UGL	
			MEC6H5		2.0	LT	1.8000	UGL	
			MEK		2.0	ND	10.0000	UGL	R
			MIBK		2.0	ND	10.0000	UGL	R
			MNBK		2.0	ND	10.0000	UGL	R
			STYR		2.0	ND	5.0000	UGL	R
			TCLEA		2.0	LT	7.1000	UGL	
			TCLEE		2.0	LT	2.3000	UGL	
			TRCLE		2.0	LT	1.0000	UGL	
			T13DCP		2.0	LT	1.6000	UGL	
			XYLEN		2.0	ND	5.0000	UGL	R
			11DCE		2.0	LT	6.8000	UGL	
			11DCLE		2.0	LT	2.7000	UGL	
			111TCE		2.0	LT	1.0000	UGL	
			112TCE		2.0	LT	1.7000	UGL	
			12DCE		2.0	LT	2.2000	UGL	
			12DCLE		2.0	LT	1.0000	UGL	

ISW4

12DCLP	2.0	LT	3.2000	UGL	
ABHC	2.0	ND	10.0000	UGL	R
AENSLF	2.0	ND	10.0000	UGL	R
ALDRN	2.0	LT	6.3000	UGL	
ANAPNE	2.0	LT	1.3000	UGL	
ANAPYL	2.0	LT	3.7000	UGL	
ANTHRC	2.0	LT	1.1000	UGL	
BAANTR	2.0	LT	.8300	UGL	
BAPYR	2.0	LT	4.5000	UGL	
BBFANT	2.0	LT	2.4000	UGL	
BBHC	2.0	LT	3.2000	UGL	
BBZP	2.0	ND	10.0000	UGL	R
BENSLF	2.0	ND	10.0000	UGL	R
BENZOA	2.0	ND	50.0000	UGL	R
BGHIPY	2.0	LT	38.0000	UGL	
BKFANT	2.0	LT	2.9000	UGL	
BZALC	2.0	ND	.1000	UGL	R
B2CEXM	2.0	ND	10.0000	UGL	R
B2CIPE	2.0	ND	10.0000	UGL	R
B2CLEE	2.0	LT	1.6000	UGL	
B2EHP	2.0	LT	34.0000	UGL	
CHRY	2.0	LT	1.0000	UGL	
CLDAN	2.0	LT	12.0000	UGL	
CL6BZ	2.0	LT	2.8000	UGL	
CL6CP	2.0	ND	10.0000	UGL	R
CL6ET	2.0	LT	8.2000	UGL	
DBAHA	2.0	LT	4.9000	UGL	
DBHC	2.0	LT	95.0000	UGL	
DBZFUR	2.0	ND	10.0000	UGL	R
DEP	2.0	ND	10.0000	UGL	R
DLDRN	2.0	LT	3.5000	UGL	
DMP	2.0	ND	10.0000	UGL	R
DNBP	2.0	ND	10.0000	UGL	R
DNOP	2.0	LT	18.0000	UGL	
ENDRN	2.0	LT	51.0000	UGL	
ENDRNK	2.0	ND	10.0000	UGL	R
ESFS04	2.0	ND	10.0000	UGL	R
FANT	2.0	LT	1.2000	UGL	
FLRENE	2.0	ND	10.0000	UGL	R
HCBD	2.0	LT	6.0000	UGL	
HPCL	2.0	LT	5.3000	UGL	
HPCLE	2.0	LT	6.7000	UGL	
ICDPYR	2.0	LT	86.0000	UGL	
ISOPHR	2.0	ND	.1000	UGL	R
LIN	2.0	LT	15.0000	UGL	
MEXCLR	2.0	ND	50.0000	UGL	R
NAP	2.0	LT	4.0000	UGL	
NB	2.0	ND	10.0000	UGL	R
NNDNPA	2.0	LT	6.7000	UGL	
NNDPA	2.0	ND	6.7000	UGL	R
PCBO16	2.0	ND	50.0000	UGL	R
PCB221	2.0	ND	50.0000	UGL	R
PCB232	2.0	ND	50.0000	UGL	R
PCB242	2.0	ND	50.0000	UGL	R
PCB248	2.0	ND	50.0000	UGL	R
PCB254	2.0	ND	50.0000	UGL	R
PCB260	2.0	ND	50.0000	UGL	R

UM13

ISW4

PCP	2.0	ND	50.0000	UGL	R
PHANTR	2.0	LT	.8500	UGL	
PHENOL	2.0	ND	10.0000	UGL	R
PPDDD	2.0	LT	6.0000	UGL	
PPDDE	2.0	LT	12.0000	UGL	
PPDDT	2.0	LT	4.7000	UGL	
PYR	2.0	LT	12.0000	UGL	
TXPHEN	2.0	ND	50.0000	UGL	R
UNK535	2.0		5.4100	UGL	
UNK549	2.0		14.7000	UGL	
UNK652	2.0		4.5400	UGL	
UNK655	2.0		5.5600	UGL	
UNK658	2.0		5.7400	UGL	
UNK660	2.0		6.7200	UGL	
UNK662	2.0		4.8100	UGL	
UNK662	2.0		5.5600	UGL	D
UNK666	2.0		5.0900	UGL	
UNK688	2.0		6.8900	UGL	
UNK692	2.0		4.9300	UGL	
UNK695	2.0		8.0900	UGL	
UNK705	2.0		5.8400	UGL	
UNK717	2.0		4.1200	UGL	
12DCLB	2.0	LT	5.2000	UGL	
124TCB	2.0	LT	4.6000	UGL	
13DCLB	2.0	LT	5.5000	UGL	
14DCLB	2.0	LT	6.0000	UGL	
2CLP	2.0	ND	10.0000	UGL	R
2CNAP	2.0	LT	1.7000	UGL	
2MNAP	2.0	ND	10.0000	UGL	R
2MP	2.0	ND	10.0000	UGL	R
2NANIL	2.0	ND	50.0000	UGL	R
2NP	2.0	ND	50.0000	UGL	R
24DCLP	2.0	ND	10.0000	UGL	R
24DMPN	2.0	ND	10.0000	UGL	R
24DNP	2.0	ND	50.0000	UGL	R
24DNT	2.0	LT	5.4000	UGL	
245TCP	2.0	ND	50.0000	UGL	R
246TCP	2.0	ND	10.0000	UGL	R
26DNT	2.0	LT	5.1000	UGL	
3NANIL	2.0	ND	50.0000	UGL	R
33DCBD	2.0	ND	20.0000	UGL	R
4BRPPE	2.0	ND	10.0000	UGL	R
4CANIL	2.0	ND	10.0000	UGL	R
4CLPPE	2.0	ND	10.0000	UGL	R
4CL3C	2.0	ND	10.0000	UGL	R
4MP	2.0	ND	10.0000	UGL	R
4NANIL	2.0	ND	50.0000	UGL	R
4NP	2.0	ND	50.0000	UGL	R
46DN2C	2.0	ND	50.0000	UGL	R
OILGR	2.0		22400.0000	UGL	

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RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : STWA
SITE ID : 1SW43FB
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	SB10	.0	LT	.1000	UGL	
			AG	SS06	.0	LT	5.5600	UGL	
			BA		.0	LT	1.4100	UGL	
			CD		.0	LT	4.0900	UGL	
			CR		.0	LT	4.4400	UGL	
			CU		.0	LT	6.2000	UGL	
			FE		.0	LT	55.1000	UGL	
			MN		.0	LT	2.8800	UGL	
			SE		.0	LT	98.6000	UGL	
			ZN		.0		18.8000	UGL	
			S04	TT06	.0	LT	223.0000	UGL	
			ACET	UM12	.0		560.0000	UGL	S
			BRDCLM		.0	ND	5.0000	UGL	R
			CCL4		.0	LT	1.0000	UGL	
			CHBR3		.0	LT	3.7000	UGL	
			CHCL3		.0	LT	1.0000	UGL	
			CH2CL2		.0	LT	23.0000	UGL	
			CH3BR		.0	ND	10.0000	UGL	R
			CH3CL		.0	LT	1.8000	UGL	
			CLC6H5		.0	LT	1.2000	UGL	
			CS2		.0	ND	5.0000	UGL	R
			C13DCP		.0	LT	1.8000	UGL	
			C2AVE		.0	ND	10.0000	UGL	R
			C2H3CL		.0	LT	13.0000	UGL	
			C2H5CL		.0	LT	6.9000	UGL	
			C6H6		.0	LT	1.7000	UGL	
			DBRCLM		.0	LT	1.8000	UGL	
			ETC6H5		.0	LT	1.4000	UGL	
			MEC6H5		.0	LT	1.8000	UGL	
			MEK		.0	ND	10.0000	UGL	R
			MIBK		.0	ND	10.0000	UGL	R
			MNBK		.0	ND	10.0000	UGL	R
			STYR		.0	ND	5.0000	UGL	R
			TCLEA		.0	LT	7.1000	UGL	
			TCLEE		.0	LT	2.3000	UGL	
			TRCLE		.0	LT	1.0000	UGL	
			T13DCP		.0	LT	1.6000	UGL	
			XYLEN		.0	ND	5.0000	UGL	R
			11DCE		.0	LT	6.8000	UGL	
			11DCLE		.0	LT	2.7000	UGL	
			111TCE		.0	LT	1.0000	UGL	
			112TCE		.0	LT	1.7000	UGL	
			12DCE		.0	LT	2.2000	UGL	
			12DCLE		.0	LT	1.0000	UGL	
			12DCLP		.0	LT	3.2000	UGL	
			ABHC	UM13	.0	ND	10.0000	UGL	R

15W43FB

AENSLF	.0	ND	10.0000	UGL	R
ALDRN	.0	LT	6.3000	UGL	
ANAPNE	.0	LT	1.3000	UGL	
ANAPYL	.0	LT	3.7000	UGL	
ANTHRC	.0	LT	1.1000	UGL	
BAANTR	.0	LT	.8300	UGL	
BAPYR	.0	LT	4.5000	UGL	
BBFANT	.0	LT	2.4000	UGL	
BBHC	.0	LT	3.2000	UGL	
BBZP	.0	ND	10.0000	UGL	R
BENSLF	.0	ND	10.0000	UGL	R
BENZOA	.0	ND	50.0000	UGL	R
BGHIPY	.0	LT	38.0000	UGL	
BKFANT	.0	LT	2.9000	UGL	
BZALC	.0	ND	.1000	UGL	R
B2CEXM	.0	ND	10.0000	UGL	R
B2CIPE	.0	ND	10.0000	UGL	R
B2CLEE	.0	LT	1.6000	UGL	
B2EHP	.0	LT	34.0000	UGL	
CHRY	.0	LT	1.0000	UGL	
CLDAN	.0	LT	12.0000	UGL	
CL6BZ	.0	LT	2.8000	UGL	
CL6CP	.0	ND	10.0000	UGL	R
CL6ET	.0	LT	8.2000	UGL	
DBAHA	.0	LT	4.9000	UGL	
DBHC	.0	LT	95.0000	UGL	
DBZFUR	.0	ND	10.0000	UGL	R
DEP	.0	ND	10.0000	UGL	R
DLDRN	.0	LT	3.5000	UGL	
DMP	.0	ND	10.0000	UGL	R
DNBP	.0	ND	10.0000	UGL	R
DNOP	.0	LT	18.0000	UGL	
ENDRN	.0	LT	51.0000	UGL	
ENDRNK	.0	ND	10.0000	UGL	R
ESFSO4	.0	ND	10.0000	UGL	R
FANT	.0	LT	1.2000	UGL	
FLRENE	.0	ND	10.0000	UGL	R
HCB0	.0	LT	6.0000	UGL	
HPCL	.0	LT	5.3000	UGL	
HPCLE	.0	LT	6.7000	UGL	
ICDPYR	.0	LT	86.0000	UGL	
ISOPHR	.0	ND	.1000	UGL	R
LIN	.0	LT	15.0000	UGL	
MEXCLR	.0	ND	50.0000	UGL	R
NAP	.0	LT	4.0000	UGL	
NB	.0	ND	10.0000	UGL	R
NNDNPA	.0	LT	6.7000	UGL	
NNDPA	.0	ND	6.7000	UGL	R
PCB016	.0	ND	50.0000	UGL	R
PCB221	.0	ND	50.0000	UGL	R
PCB232	.0	ND	50.0000	UGL	R
PCB242	.0	ND	50.0000	UGL	R
PCB248	.0	ND	50.0000	UGL	R
PCB254	.0	ND	50.0000	UGL	R
PCB260	.0	ND	50.0000	UGL	R
PCP	.0	ND	50.0000	UGL	R
PHANTR	.0	LT	.8500	UGL	

ISW43FB

PHENOL	.0	ND	10.0000	UGL	R
PPDDD	.0	LT	6.0000	UGL	
PPDDE	.0	LT	12.0000	UGL	
PPDDT	.0	LT	4.7000	UGL	
PYR	.0	LT	12.0000	UGL	
TXPHEN	.0	ND	50.0000	UGL	R
UNK646	.0		6.1300	UGL	
UNK651	.0		5.6000	UGL	
UNK662	.0		4.8600	UGL	
UNK676	.0		4.9000	UGL	
UNK678	.0		5.2200	UGL	
UNK687	.0		6.5700	UGL	
UNK688	.0		4.5500	UGL	
UNK693	.0		4.7800	UGL	
UNK696	.0		5.2900	UGL	
UNK699	.0		5.2300	UGL	
UNK705	.0		8.6000	UGL	
UNK706	.0		5.4400	UGL	
12DCLB	.0	LT	5.2000	UGL	
124TCB	.0	LT	4.6000	UGL	
13DCLB	.0	LT	5.5000	UGL	
14DCLB	.0	LT	6.0000	UGL	
2CLP	.0	ND	10.0000	UGL	R
2CNAP	.0	LT	1.7000	UGL	
2MNAP	.0	ND	10.0000	UGL	R
2MP	.0	ND	10.0000	UGL	R
2NANIL	.0	ND	50.0000	UGL	R
2NP	.0	ND	50.0000	UGL	R
24DCLP	.0	ND	10.0000	UGL	R
24DMPN	.0	ND	10.0000	UGL	R
24DNP	.0	ND	50.0000	UGL	R
24DNT	.0	LT	5.4000	UGL	
245TCP	.0	ND	50.0000	UGL	R
246TCP	.0	ND	10.0000	UGL	R
26DNT	.0	LT	5.1000	UGL	
3NANIL	.0	ND	50.0000	UGL	R
33DCBD	.0	ND	20.0000	UGL	R
4BRPPE	.0	ND	10.0000	UGL	R
4CANIL	.0	ND	10.0000	UGL	R
4CLPPE	.0	ND	10.0000	UGL	R
4CL3C	.0	ND	10.0000	UGL	R
4MP	.0	ND	10.0000	UGL	R
4NANIL	.0	ND	50.0000	UGL	R
4NP	.0	ND	50.0000	UGL	R
46DN2C	.0	ND	50.0000	UGL	R

III. Sediment Samples

RUN DATE: 12 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSE ANALYTICAL RESULTS
SITE TYPE : BASN
SITE ID : 1SE1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	JB09	.8		4.2000	UGG	
			AS	JD11	7.8		18.5000	UGG	
			SB		7.8		5.6400	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		70.0000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8		1.5900	UGG	
			CR		.8		18.8000	UGG	
			CU		.8		310.0000	UGG	
			FE		.8		7000.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		14.4000	UGG	
			PB		.8		316.0000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		470.0000	UGG	
			S04	KT03	.8	LT	14.0000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8		.6680	UGG	
			BAPYR		7.8		.8500	UGG	
			BBFANT		7.8		.9120	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8		.8230	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8		.8530	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8	ND	.3300	UGG	R
			DEP		7.8	ND	.3300	UGG	R

ISEI

DLDRN	7.8	LT	.8600	UGG	
DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8		.9700	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCBD	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDDD	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8		.7150	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK527	7.8		.7540	UGG	
UNK528	7.8		2.2900	UGG	
UNK530	7.8		.3520	UGG	
UNK532	7.8		12.4000	UGG	
UNK535	7.8		.5130	UGG	
UNK536	7.8		14.2000	UGG	
UNK537	7.8		.8520	UGG	
UNK538	7.8		2.8700	UGG	D
UNK538	7.8		.8870	UGG	
UNK539	7.8		4.1400	UGG	
UNK544	7.8		1.1500	UGG	
UNK545	7.8		3.8200	UGG	
UNK546	7.8		.0400	UGG	
UNK547	7.8		1.0700	UGG	
UNK548	7.8		2.4500	UGG	
UNK552	7.8		2.0000	UGG	
UNK553	7.8		5.8100	UGG	
UNK576	7.8		.4220	UGG	
UNK645	7.8		4.7400	UGG	
UNK660	7.8		6.6500	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	

ISE1

14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8	ND	.3300	UGG	R
2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	7.8		.0317	UGG	S
BRDCLM	7.8	ND	.0050	UGG	R
CCL4	7.8	LT	.0020	UGG	
CHBR3	7.8	LT	.0039	UGG	
CHCL3	7.8	LT	.0150	UGG	
CH2CL2	7.8	ND	.0100	UGG	R
CH3BR	7.8	ND	.0100	UGG	R
CH3CL	7.8	LT	.0045	UGG	
CLC6H5	7.8	LT	.0020	UGG	
CS2	7.8	ND	.0050	UGG	R
C13DCP	7.8	LT	.0028	UGG	
C2AVE	7.8	ND	.0100	UGG	R
C2H3CL	7.8	LT	.0078	UGG	
C2H5CL	7.8	LT	.0100	UGG	
C6H6	7.8	LT	.0048	UGG	
DBRCLM	7.8	LT	.0023	UGG	
ETC6H5	7.8	LT	.0100	UGG	
MEC6H5	7.8	LT	.0062	UGG	
MEK	7.8	ND	.0100	UGG	R
MIBK	7.8	ND	.0100	UGG	R
MNBK	7.8	ND	.0100	UGG	R
STYR	7.8	ND	.0050	UGG	R
TCLEA	7.8	LT	.0028	UGG	
TCLEE	7.8	LT	.0079	UGG	
TRCLE	7.8	LT	.0020	UGG	
T13DCP	7.8	LT	.0020	UGG	
XYLEN	7.8	ND	.0050	UGG	R
11DCE	7.8	LT	.0120	UGG	
11DCLE	7.8	LT	.0073	UGG	
111TCE	7.8	LT	.0059	UGG	
112TCE	7.8	LT	.0028	UGG	
12DCE	7.8	LT	.0061	UGG	
12DCLE	7.8	LT	.0048	UGG	

LM12

ISEI

12DCLP
OILGR

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7.8
.8

LT

.0100 UGG
779.0000 UGG

RUN DATE: 12 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSE ANALYTICAL RESULTS
SITE TYPE : BASN
SITE ID : 1SE2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	JB09	.5		.1100	UGG	
			AS	JD11	4.9		13.4000	UGG	
			SB		4.9	LT	.3730	UGG	
			AG	JS05	.5	LT	.6990	UGG	
			BA		.5		34.8000	UGG	
			BE		.5	LT	.3310	UGG	
			CD		.5	LT	.9510	UGG	
			CR		.5	LT	9.3100	UGG	
			CU		.5		45.5000	UGG	
			FE		.5		7199.9999	UGG	
			MN		.5	LT	292.0000	UGG	
			NI		.5		10.4000	UGG	
			PB		.5	LT	92.3000	UGG	
			SE		.5	LT	92.4000	UGG	
			TL		.5	LT	67.6000	UGG	
			ZN		.5		83.8000	UGG	
			SO4	KTO3	.5		109.0000	UGG	
			ABHC	LM11	4.9	ND	.5000	UGG	R
			AENSLF		4.9	ND	.5000	UGG	R
			ALDRN		4.9	LT	.4200	UGG	
			ANAPNE		4.9	LT	.3400	UGG	
			ANAPYL		4.9	LT	.3100	UGG	
			ANTHRC		4.9	LT	.2900	UGG	
			BAANTR		4.9	LT	.2700	UGG	
			BAPYR		4.9	LT	.1600	UGG	
			BBFANT		4.9	LT	.2500	UGG	
			BBHC		4.9	LT	.3300	UGG	
			BBZP		4.9	ND	.3300	UGG	R
			BENSLF		4.9	ND	1.0000	UGG	R
			BENZOA		4.9	ND	2.0000	UGG	R
			BGHIPY		4.9	LT	.5200	UGG	
			BKFANT		4.9	LT	.2200	UGG	
			BZALC		4.9	ND	.3300	UGG	R
			B2CEXM		4.9	ND	.3300	UGG	R
			B2CIPE		4.9	ND	.3300	UGG	R
			B2CLEE		4.9	LT	.3800	UGG	
			B2EHP		4.9	LT	.6500	UGG	
			CHRY		4.9	LT	.1900	UGG	
			CLDAN		4.9	LT	.8100	UGG	
			CL6BZ		4.9	LT	.3500	UGG	
			CL6CP		4.9	ND	.3300	UGG	R
			CL6ET		4.9	LT	.1400	UGG	
			DBAHA		4.9	LT	.5700	UGG	
			DBHC		4.9	LT	.5700	UGG	
			DBZFUR		4.9	ND	.3300	UGG	R
			DEP		4.9	ND	.3300	UGG	R

15E2

DLDRN	4.9	LT	.8600	UGG	
DMP	4.9	ND	.3300	UGG	R
DNBP	4.9	ND	.3300	UGG	R
DNOP	4.9	LT	.3500	UGG	
ENDRN	4.9	LT	.3800	UGG	
ENDRNK	4.9	ND	1.0000	UGG	R
ESFS04	4.9	ND	1.0000	UGG	R
FANT	4.9	LT	.2100	UGG	
FLRENE	4.9	ND	.3300	UGG	R
HCBD	4.9	LT	.2900	UGG	
HPCL	4.9	LT	.2700	UGG	
ICDPYR	4.9	LT	.4500	UGG	
ISOPHR	4.9	ND	.3300	UGG	R
LIN	4.9	LT	.3000	UGG	
MEXCLR	4.9	ND	5.0000	UGG	R
NAP	4.9	LT	.2800	UGG	
NB	4.9	ND	.3300	UGG	R
NNDNPA	4.9	LT	.1100	UGG	
NNDPA	4.9	ND	.3300	UGG	R
PCBO16	4.9	ND	5.0000	UGG	R
PCB221	4.9	ND	5.0000	UGG	R
PCB232	4.9	ND	5.0000	UGG	R
PCB242	4.9	ND	5.0000	UGG	R
PCB248	4.9	ND	5.0000	UGG	R
PCB254	4.9	ND	10.0000	UGG	R
PCB260	4.9	ND	10.0000	UGG	R
PCP	4.9	ND	2.0000	UGG	R
PHANTR	4.9	LT	1.6000	UGG	
PHENOL	4.9	ND	.3300	UGG	R
PPDDD	4.9	LT	.3900	UGG	
PPDDE	4.9	LT	.4000	UGG	
PPDDT	4.9	LT	.4800	UGG	
PYR	4.9	LT	.5300	UGG	
TXPHEN	4.9	ND	10.0000	UGG	R
UNK527	4.9		1.0800	UGG	
UNK528	4.9		2.2100	UGG	
UNK532	4.9		.5450	UGG	
UNK532	4.9		12.2000	UGG	D
UNK534	4.9		.4170	UGG	
UNK535	4.9		.5910	UGG	
UNK536	4.9		13.6000	UGG	
UNK537	4.9		.8830	UGG	
UNK538	4.9		2.8400	UGG	D
UNK538	4.9		.9830	UGG	
UNK539	4.9		4.1400	UGG	
UNK544	4.9		3.0900	UGG	
UNK545	4.9		2.6700	UGG	
UNK546	4.9		.3870	UGG	
UNK548	4.9		2.9800	UGG	D
UNK548	4.9		.6620	UGG	
UNK550	4.9		.5530	UGG	
UNK552	4.9		1.0200	UGG	
UNK553	4.9		7.0100	UGG	
UNK576	4.9		.3900	UGG	
12DCLB	4.9	LT	.3300	UGG	
124TCB	4.9	LT	.1700	UGG	
13DCLB	4.9	LT	.3000	UGG	

ISE2

14DCLB	4.9	LT	.2900	UGG	
2CLP	4.9	ND	.3300	UGG	R
2CNAP	4.9	LT	.3200	UGG	
2MNAP	4.9	ND	.3300	UGG	R
2MP	4.9	ND	.3300	UGG	R
2NANIL	4.9	ND	2.0000	UGG	R
2NP	4.9	ND	.3300	UGG	R
24DCLP	4.9	ND	.3300	UGG	R
24DMPN	4.9	ND	.3300	UGG	R
24DNP	4.9	ND	2.0000	UGG	R
24DNT	4.9	LT	.4600	UGG	
245TCP	4.9	ND	2.0000	UGG	R
246TCP	4.9	ND	.3300	UGG	R
26DNT	4.9	LT	.2000	UGG	
3NANIL	4.9	ND	2.0000	UGG	R
33DCBD	4.9	ND	.7000	UGG	R
4BRPPE	4.9	ND	.3300	UGG	R
4CANIL	4.9	ND	.2800	UGG	R
4CLPPE	4.9	ND	.3300	UGG	R
4CL3C	4.9	ND	.2900	UGG	R
4MP	4.9	ND	.3300	UGG	R
4NANIL	4.9	ND	2.0000	UGG	R
4NP	4.9	ND	2.0000	UGG	R
46DN2C	4.9	ND	2.0000	UGG	R
ACET	4.9		.0348	UGG	S
BRDCLM	4.9	ND	.0050	UGG	R
CCL4	4.9	LT	.0020	UGG	
CHBR3	4.9	LT	.0039	UGG	
CHCL3	4.9	LT	.0150	UGG	
CH2CL2	4.9	ND	.0100	UGG	R
CH3BR	4.9	ND	.0100	UGG	R
CH3CL	4.9	LT	.0045	UGG	
CLC6H5	4.9	LT	.0020	UGG	
CS2	4.9	ND	.0050	UGG	R
C13DCP	4.9	LT	.0028	UGG	
C2AVE	4.9	ND	.0100	UGG	R
C2H3CL	4.9	LT	.0078	UGG	
C2H5CL	4.9	LT	.0100	UGG	
C6H6	4.9	LT	.0048	UGG	
DBRCLM	4.9	LT	.0023	UGG	
ETC6H5	4.9	LT	.0100	UGG	
MEC6H5	4.9	LT	.0062	UGG	
MEK	4.9	ND	.0100	UGG	R
MIBK	4.9	ND	.0100	UGG	R
MNBK	4.9	ND	.0100	UGG	R
STYR	4.9	ND	.0050	UGG	R
TCLEA	4.9	LT	.0028	UGG	
TCLEE	4.9	LT	.0079	UGG	
TRCLE	4.9	LT	.0020	UGG	
T13DCP	4.9	LT	.0020	UGG	
XYLEN	4.9	ND	.0050	UGG	R
11DCE	4.9	LT	.0120	UGG	
11DCL	4.9	LT	.0073	UGG	
111TCE	4.9	LT	.0059	UGG	
112TCE	4.9	LT	.0028	UGG	
12DCE	4.9	LT	.0061	UGG	
12DCL	4.9	LT	.0048	UGG	

LM12

15E2
12DCLP
01LGR

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4.9
.5

LT

.0100 UGG
571.0000 UGG

RUN DATE: 12 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSE ANALYTICAL RESULTS
SITE TYPE : BASN
SITE ID : 1SE3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	JB09	.8		.2830	UGG	
			AS	JD11	7.8		17.9000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		150.0000	UGG	
			BE		.8		1.0200	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8		21.4000	UGG	
			CU		.8	LT	6.2900	UGG	
			FE		.8		25999.9998	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		20.0000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		320.0000	UGG	
			SO4	KT03	.8		65.1000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8		2.2700	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8		4.9800	UGG	
			BAANTR		7.8		7.2300	UGG	
			BAPYR		7.8		6.7100	UGG	
			BBFANT		7.8		5.9800	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8		5.1600	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8		8.2500	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8		2.5900	UGG	S
			DEP		7.8	ND	.3300	UGG	R

15E3

DLDRN	7.8	LT	.8600	UGG	
DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8		23.0000	UGG	
FLRENE	7.8		3.3000	UGG	S
HCBP	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8		1.3600	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDDO	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8		10.3000	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK528	7.8		2.3000	UGG	
UNK532	7.8		12.0000	UGG	
UNK536	7.8		14.1000	UGG	
UNK537	7.8		.9290	UGG	
UNK538	7.8		1.0600	UGG	
UNK538	7.8		3.0700	UGG	D
UNK539	7.8		4.4100	UGG	
UNK545	7.8		5.4900	UGG	
UNK548	7.8		2.2800	UGG	
UNK552	7.8		3.3700	UGG	
UNK553	7.8		7.6500	UGG	
UNK572	7.8		.4810	UGG	
UNK590	7.8		2.0300	UGG	
UNK592	7.8		1.0300	UGG	
UNK599	7.8		.9940	UGG	
UNK600	7.8		1.5000	UGG	
UNK602	7.8		1.2300	UGG	
UNK605	7.8		1.2000	UGG	
UNK607	7.8		2.3400	UGG	
UNK619	7.8		1.0600	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	

15E3

14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8	ND	.3300	UGG	R
2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	7.8	ND	.0100	UGG	R
BRDCLM	7.8	ND	.0050	UGG	R
CCL4	7.8	LT	.0020	UGG	
CHBR3	7.8	LT	.0039	UGG	
CHCL3	7.8	LT	.0150	UGG	
CH2CL2	7.8	ND	.0100	UGG	R
CH3BR	7.8	ND	.0100	UGG	R
CH3CL	7.8	LT	.0045	UGG	
CLC6H5	7.8		.0045	UGG	
CS2	7.8	ND	.0050	UGG	R
C13DCP	7.8	LT	.0028	UGG	
C2AVE	7.8	ND	.0100	UGG	R
C2H3CL	7.8	LT	.0078	UGG	
C2H5CL	7.8	LT	.0100	UGG	
C6H6	7.8	LT	.0048	UGG	
DBRCLM	7.8	LT	.0023	UGG	
ETC6H5	7.8	LT	.0100	UGG	
MEC6H5	7.8	LT	.0062	UGG	
MEK	7.8	ND	.0100	UGG	R
MIBK	7.8	ND	.0100	UGG	R
MNBK	7.8	ND	.0100	UGG	R
STYR	7.8	ND	.0050	UGG	R
TCLEA	7.8	LT	.0028	UGG	
TCLEE	7.8	LT	.0079	UGG	
TRCLE	7.8	LT	.0020	UGG	
T13DCP	7.8	LT	.0020	UGG	
XYLEN	7.8	ND	.0050	UGG	R
11DCE	7.8	LT	.0120	UGG	
11DCLE	7.8	LT	.0073	UGG	
111TCE	7.8	LT	.0059	UGG	
112TCE	7.8	LT	.0028	UGG	
12DCE	7.8	LT	.0061	UGG	
12DCLE	7.8	LT	.0048	UGG	

LM12

15E3

12DCLP
0ILGR

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7.8
.8

LT

.0100 UGG
598.0000 UGG

RUN DATE: 12 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSE ANALYTICAL RESULTS
SITE TYPE : BASN
SITE ID : 1SE4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/08/88	ME	HG	JB09	2.0		.3320	UGG	
			AS	JD11	2.0		41.0000	UGG	
			SB		2.0		4.6500	UGG	
			AG	JS05	2.0	LT	.6990	UGG	
			BA		2.0		40.2000	UGG	
			BE		2.0		.8850	UGG	
			CD		2.0		1.7300	UGG	
			CR		2.0		93.0000	UGG	
			CU		2.0		130.0000	UGG	
			FE		2.0		15999.9999	UGG	
			MN		2.0	LT	292.0000	UGG	
			NI		2.0		33.3000	UGG	
			PB		2.0		221.0000	UGG	
			SE		2.0	LT	92.4000	UGG	
			TL		2.0	LT	67.6000	UGG	
			ZN		2.0	LT	8.3800	UGG	
			S04	KTO3	2.0		820.0000	UGG	
			ABHC	LM11	2.0	ND	.5000	UGG	R
			AENSLF		2.0	ND	.5000	UGG	R
			ALDRN		2.0	LT	.4200	UGG	
			ANAPNE		2.0		.3790	UGG	
			ANAPYL		2.0	LT	.3100	UGG	
			ANTHRC		2.0		.5440	UGG	
			BAANTR		2.0		1.4400	UGG	
			BAPYR		2.0		1.3600	UGG	
			BBFANT		2.0		.7910	UGG	
			BBHC		2.0	LT	.3300	UGG	
			BBZP		2.0	ND	.3300	UGG	R
			BENSLF		2.0	ND	1.0000	UGG	R
			BENZOA		2.0	ND	2.0000	UGG	R
			BGHIPY		2.0	LT	.5200	UGG	
			BKFANT		2.0	LT	.2200	UGG	
			BZALC		2.0	ND	.3300	UGG	R
			B2CEXM		2.0	ND	.3300	UGG	R
			B2CIPE		2.0	ND	.3300	UGG	R
			B2CLEE		2.0	LT	.3800	UGG	
			B2EHP		2.0	LT	.6500	UGG	
			CHRY		2.0		2.3400	UGG	
			CLDAN		2.0	LT	.8100	UGG	
			CL6BZ		2.0	LT	.3500	UGG	
			CL6CP		2.0	ND	.3300	UGG	R
			CL6ET		2.0	LT	.1400	UGG	
			DBAHA		2.0	LT	.5700	UGG	
			DBHC		2.0	LT	.5700	UGG	
			DBZFUR		2.0	ND	.3300	UGG	R
			DEP		2.0	ND	.3300	UGG	R

ISE4

DLDRN	2.0	LT	.8600	UGG	
DMP	2.0	ND	.3300	UGG	R
DNBP	2.0		.4790	UGG	S
DNOP	2.0	LT	.3500	UGG	
ENDRN	2.0	LT	.3800	UGG	
ENDRNK	2.0	ND	1.0000	UGG	R
ESFSO4	2.0	ND	1.0000	UGG	R
FANT	2.0		3.4400	UGG	
FLRENE	2.0	ND	.3300	UGG	R
HCB0	2.0	LT	.2900	UGG	
HPCL	2.0	LT	.2700	UGG	
ICDPYR	2.0	LT	.4500	UGG	
ISOPHR	2.0	ND	.3300	UGG	R
LIN	2.0	LT	.3000	UGG	
MEXCLR	2.0	ND	5.0000	UGG	R
NAP	2.0	LT	.2800	UGG	
NB	2.0	ND	.3300	UGG	R
NNDNPA	2.0	LT	.1100	UGG	
NNDPA	2.0	ND	.3300	UGG	R
PCB016	2.0	ND	5.0000	UGG	R
PCB221	2.0	ND	5.0000	UGG	R
PCB232	2.0	ND	5.0000	UGG	R
PCB242	2.0	ND	5.0000	UGG	R
PCB248	2.0	ND	5.0000	UGG	R
PCB254	2.0	ND	10.0000	UGG	R
PCB260	2.0	ND	10.0000	UGG	R
PCP	2.0	ND	2.0000	UGG	R
PHANTR	2.0		3.1400	UGG	
PHENOL	2.0	ND	.3300	UGG	R
PPDDD	2.0	LT	.3900	UGG	
PPDDE	2.0	LT	.4000	UGG	
PPDDT	2.0	LT	.4800	UGG	
PYR	2.0	LT	.5300	UGG	
TXPHEN	2.0	ND	10.0000	UGG	R
UNK527	2.0		.8000	UGG	
UNK528	2.0		1.8800	UGG	
UNK532	2.0		.3370	UGG	
UNK533	2.0		10.5000	UGG	
UNK534	2.0		.3680	UGG	
UNK535	2.0		.3490	UGG	
UNK536	2.0		12.4000	UGG	
UNK537	2.0		.7280	UGG	
UNK538	2.0		2.4800	UGG	D
UNK538	2.0		.7340	UGG	
UNK539	2.0		3.4700	UGG	
UNK544	2.0		1.1200	UGG	
UNK545	2.0		3.8600	UGG	
UNK548	2.0		4.8600	UGG	D
UNK548	2.0		.7190	UGG	
UNK550	2.0		.3440	UGG	
UNK552	2.0		1.5800	UGG	
UNK553	2.0		6.4500	UGG	
UNK582	2.0		.4480	UGG	
UNK590	2.0		.4860	UGG	
12DCLB	2.0	LT	.3300	UGG	
124TCB	2.0	LT	.1700	UGG	
13DCLB	2.0	LT	.3000	UGG	

ISE4

14DCLB	2.0	LT	.2900	UGG	
2CLP	2.0	ND	.3300	UGG	R
2CNAP	2.0	LT	.3200	UGG	
2MNAP	2.0	ND	.3300	UGG	R
2MP	2.0	ND	.3300	UGG	R
2NANIL	2.0	ND	2.0000	UGG	R
2NP	2.0	ND	.3300	UGG	R
24DCLP	2.0	ND	.3300	UGG	R
24DMPN	2.0	ND	.3300	UGG	R
24DNP	2.0	ND	2.0000	UGG	R
24DNT	2.0	LT	.4600	UGG	
245TCP	2.0	ND	2.0000	UGG	R
246TCP	2.0	ND	.3300	UGG	R
26DNT	2.0	LT	.2000	UGG	
3NANIL	2.0	ND	2.0000	UGG	R
33DCBD	2.0	ND	.7000	UGG	R
4BRPPE	2.0	ND	.3300	UGG	R
4CANIL	2.0	ND	.2800	UGG	R
4CLPPE	2.0	ND	.3300	UGG	R
4CL3C	2.0	ND	.2900	UGG	R
4MP	2.0	ND	.3300	UGG	R
4NANIL	2.0	ND	2.0000	UGG	R
4NP	2.0	ND	2.0000	UGG	R
46DN2C	2.0	ND	2.0000	UGG	R
ACET	2.0	ND	.0100	UGG	R
BRDCLM	2.0	ND	.0050	UGG	R
CCL4	2.0	LT	.0020	UGG	
CHBR3	2.0	LT	.0039	UGG	
CHCL3	2.0	LT	.0150	UGG	
CH2CL2	2.0	ND	.0100	UGG	R
CH3BR	2.0	ND	.0100	UGG	R
CH3CL	2.0	LT	.0045	UGG	
CLC6H5	2.0	LT	.0020	UGG	
CS2	2.0	ND	.0050	UGG	R
C13DCP	2.0	LT	.0028	UGG	
C2AVE	2.0	ND	.0100	UGG	R
C2H3CL	2.0	LT	.0078	UGG	
C2H5CL	2.0	LT	.0100	UGG	
C6H6	2.0	LT	.0048	UGG	
DBRCLM	2.0	LT	.0023	UGG	
ETC6H5	2.0	LT	.0100	UGG	
MEC6H5	2.0	LT	.0062	UGG	
MEK	2.0	ND	.0100	UGG	R
MIBK	2.0	ND	.0100	UGG	R
MNBK	2.0	ND	.0100	UGG	R
STYR	2.0	ND	.0050	UGG	R
TCLEA	2.0	LT	.0028	UGG	
TCLEE	2.0	LT	.0079	UGG	
TRCLE	2.0	LT	.0020	UGG	
T13DCP	2.0	LT	.0020	UGG	
XYLEN	2.0	ND	.0050	UGG	R
11DCE	2.0	LT	.0120	UGG	
11DCL	2.0	LT	.0073	UGG	
111TCE	2.0	LT	.0059	UGG	
112TCE	2.0	LT	.0028	UGG	
12DCE	2.0	LT	.0061	UGG	
12DCL	2.0	LT	.0048	UGG	

LM12

ISE4
12DCLP
0ILGR

00

2.0
2.0

LT

.0100 UGG
3070.0000 UGG

IV. Soil Samples

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/09/88	ME	HG	JB09	3.0		.1390	UGG	
			AS	JD11	2.9		35.0000	UGG	
			SB		2.9	LT	.3730	UGG	
			AG	JS05	3.0	LT	.6990	UGG	
			BA		3.0	LT	7.9800	UGG	
			BE		3.0		.5450	UGG	
			CD		3.0	LT	.9510	UGG	
			CR		3.0		15.4000	UGG	
			CU		3.0		37.4000	UGG	
			FE		3.0		10999.9999	UGG	
			MN		3.0	LT	292.0000	UGG	
			NI		3.0		11.2000	UGG	
			PB		3.0		110.0000	UGG	
			SE		3.0	LT	92.4000	UGG	
			TL		3.0	LT	67.6000	UGG	
			ZN		3.0		670.0000	UGG	
			S04	KT03	3.0		21.2000	UGG	
			ABHC	LM11	2.9	ND	.5000	UGG	R
			AENSLF		2.9	ND	.5000	UGG	R
			ALDRN		2.9	LT	.4200	UGG	
			ANAPNE		2.9	LT	.3400	UGG	
			ANAPYL		2.9	LT	.3100	UGG	
			ANTHRC		2.9	LT	.2900	UGG	
			BAANTR		2.9	LT	.2700	UGG	
			BAPYR		2.9	LT	.1600	UGG	
			BBFANT		2.9	LT	.2500	UGG	
			BBHC		2.9	LT	.3300	UGG	
			BBZP		2.9	ND	.3300	UGG	R
			BENSLF		2.9	ND	1.0000	UGG	R
			BENZOA		2.9	ND	2.0000	UGG	R
			BGHIPY		2.9	LT	.5200	UGG	
			BKFANT		2.9	LT	.2200	UGG	
			BZALC		2.9	ND	.3300	UGG	R
			B2CEXM		2.9	ND	.3300	UGG	R
			B2CIPE		2.9	ND	.3300	UGG	R
			B2CLEE		2.9	LT	.3800	UGG	
			B2EHP		2.9	LT	.6500	UGG	
			CHRY		2.9		.4040	UGG	
			CLDAN		2.9	LT	.8100	UGG	
			CL6BZ		2.9	LT	.3500	UGG	
			CL6CP		2.9	ND	.3300	UGG	R
			CL6ET		2.9	LT	.1400	UGG	
			DBAHA		2.9	LT	.5700	UGG	
			DBHC		2.9	LT	.5700	UGG	
			DBZFUR		2.9	ND	.3300	UGG	R
			DEP		2.9	ND	.3300	UGG	R

2551

DLDRN	2.9	LT	.8600	UGG	
DMP	2.9	ND	.3300	UGG	R
DNBP	2.9	ND	.3300	UGG	R
DNOP	2.9	LT	.3500	UGG	
ENDRN	2.9	LT	.3800	UGG	
ENDRNK	2.9	ND	1.0000	UGG	R
ESFS04	2.9	ND	1.0000	UGG	R
FANT	2.9		.3210	UGG	
FLRENE	2.9	ND	.3300	UGG	R
HCBD	2.9	LT	.2900	UGG	
HPCL	2.9	LT	.2700	UGG	
ICDPYR	2.9	LT	.4500	UGG	
ISOPHR	2.9	ND	.3300	UGG	R
LIN	2.9	LT	.3000	UGG	
MEXCLR	2.9	ND	5.0000	UGG	R
NAP	2.9	LT	.2800	UGG	
NB	2.9	ND	.3300	UGG	R
NNDNPA	2.9	LT	.1100	UGG	
NNDPA	2.9	ND	.3300	UGG	R
PCB016	2.9	ND	5.0000	UGG	R
PCB221	2.9	ND	5.0000	UGG	R
PCB232	2.9	ND	5.0000	UGG	R
PCB242	2.9	ND	5.0000	UGG	R
PCB248	2.9	ND	5.0000	UGG	R
PCB254	2.9	ND	10.0000	UGG	R
PCB260	2.9	ND	10.0000	UGG	R
PCP	2.9	ND	2.0000	UGG	R
PHANTR	2.9	LT	1.6000	UGG	
PHENOL	2.9	ND	.3300	UGG	R
PPDDD	2.9	LT	.3900	UGG	
PPDDE	2.9	LT	.4000	UGG	
PPDDT	2.9	LT	.4800	UGG	
PYR	2.9	LT	.5300	UGG	
TXPHEN	2.9	ND	10.0000	UGG	R
UNK527	2.9		.6180	UGG	
UNK528	2.9		1.8200	UGG	
UNK530	2.9		.2710	UGG	
UNK532	2.9		9.5900	UGG	
UNK536	2.9		11.7000	UGG	
UNK537	2.9		.7790	UGG	
UNK538	2.9		2.5900	UGG	D
UNK538	2.9		.7860	UGG	
UNK539	2.9		3.5700	UGG	
UNK544	2.9		.5760	UGG	
UNK545	2.9		2.9000	UGG	
UNK546	2.9		.2560	UGG	
UNK548	2.9		1.6200	UGG	
UNK550	2.9		.3230	UGG	
UNK552	2.9		.2820	UGG	D
UNK552	2.9		.5780	UGG	
UNK553	2.9		2.0800	UGG	
UNK576	2.9		.3130	UGG	
UNK579	2.9		.4460	UGG	
UNK582	2.9		.3140	UGG	
12DCLB	2.9	LT	.3300	UGG	
124TCB	2.9	LT	.1700	UGG	
13DCLB	2.9	LT	.3000	UGG	

2SS1

14DCLB	2.9	LT	.2900	UGG	
2CLP	2.9	ND	.3300	UGG	R
2CNAP	2.9	LT	.3200	UGG	
2MNAP	2.9	ND	.3300	UGG	R
2MP	2.9	ND	.3300	UGG	R
2NANIL	2.9	ND	2.0000	UGG	R
2NP	2.9	ND	.3300	UGG	R
24DCLP	2.9	ND	.3300	UGG	R
24DMPN	2.9	ND	.3300	UGG	R
24DNP	2.9	ND	2.0000	UGG	R
24DNT	2.9	LT	.4600	UGG	
245TCP	2.9	ND	2.0000	UGG	R
246TCP	2.9	ND	.3300	UGG	R
26DNT	2.9	LT	.2000	UGG	
3NANIL	2.9	ND	2.0000	UGG	R
33DCBD	2.9	ND	.7000	UGG	R
4BRPPE	2.9	ND	.3300	UGG	R
4CANIL	2.9	ND	.2800	UGG	R
4CLPPE	2.9	ND	.3300	UGG	R
4CL3C	2.9	ND	.2900	UGG	R
4MP	2.9	ND	.3300	UGG	R
4NANIL	2.9	ND	2.0000	UGG	R
4NP	2.9	ND	2.0000	UGG	R
46DN2C	2.9	ND	2.0000	UGG	R
ACET	2.9	ND	.0100	UGG	R
BRDCLM	2.9	ND	.0050	UGG	R
CCL4	2.9	LT	.0020	UGG	
CHBR3	2.9	LT	.0039	UGG	
CHCL3	2.9	LT	.0150	UGG	
CH2CL2	2.9	ND	.0100	UGG	R
CH3BR	2.9	ND	.0100	UGG	R
CH3CL	2.9	LT	.0045	UGG	
CLC6H5	2.9	LT	.0020	UGG	
CS2	2.9	ND	.0050	UGG	R
C13DCP	2.9	LT	.0028	UGG	
C2AVE	2.9	ND	.0100	UGG	R
C2H3CL	2.9	LT	.0078	UGG	
C2H5CL	2.9	LT	.0100	UGG	
C6H6	2.9	LT	.0048	UGG	
DBRCLM	2.9	LT	.0023	UGG	
ETC6H5	2.9	LT	.0100	UGG	
MEC6H5	2.9	LT	.0062	UGG	
MEK	2.9	ND	.0100	UGG	R
MIBK	2.9	ND	.0100	UGG	R
MNBK	2.9	ND	.0100	UGG	R
STYR	2.9	ND	.0050	UGG	R
TCLEA	2.9	LT	.0028	UGG	
TCLEE	2.9	LT	.0079	UGG	
TRCLE	2.9	LT	.0020	UGG	
T13DCP	2.9	LT	.0020	UGG	
UNK253	2.9		.0086	UGG	
XYLEN	2.9	ND	.0050	UGG	R
11DCE	2.9	LT	.0120	UGG	
11DCL	2.9	LT	.0073	UGG	
111TCE	2.9	LT	.0059	UGG	
112TCE	2.9	LT	.0028	UGG	
12DCE	2.9	LT	.0061	UGG	

LM12

2SSI

12DCLE		2.9	LT	.0048	UGG
12DCLP		2.9	LT	.0100	UGG
01LGR	00	3.0		.599.0000	UGG

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/09/88	ME	HG	JB09	1.0		.0421	UGG	
			AS	JD11	9.8		85.0000	UGG	
			SB		9.8	LT	.3730	UGG	
			AG	JS05	1.0	LT	.6990	UGG	
			BA		1.0		100.0000	UGG	
			BE		1.0		.8640	UGG	
			CD		1.0	LT	.9510	UGG	
			CR		1.0		11.6000	UGG	
			CU		1.0		42.6000	UGG	
			FE		1.0		29000.0000	UGG	
			MN		1.0	LT	292.0000	UGG	
			NI		1.0		26.3000	UGG	
			PB		1.0	LT	92.3000	UGG	
			SE		1.0	LT	92.4000	UGG	
			TL		1.0	LT	67.6000	UGG	
			ZN		1.0		1000.0000	UGG	
			S04	KT03	1.0		43.8000	UGG	
			ABHC	LM11	9.8	ND	.5000	UGG	R
			AENSLF		9.8	ND	.5000	UGG	R
			ALDRN		9.8	LT	.4200	UGG	
			ANAPNE		9.8	LT	.3400	UGG	
			ANAPYL		9.8	LT	.3100	UGG	
			ANTHRC		9.8	LT	.2900	UGG	
			BAANTR		9.8	LT	.2700	UGG	
			BAPYR		9.8	LT	.1600	UGG	
			BBFANT		9.8	LT	.2500	UGG	
			BBHC		9.8	LT	.3300	UGG	
			BBZP		9.8	ND	.3300	UGG	R
			BENSLF		9.8	ND	1.0000	UGG	R
			BENZOA		9.8	ND	2.0000	UGG	R
			BGHIPY		9.8	LT	.5200	UGG	
			BKFANT		9.8	LT	.2200	UGG	
			BZALC		9.8	ND	.3300	UGG	R
			B2CEXM		9.8	ND	.3300	UGG	R
			B2CIPE		9.8	ND	.3300	UGG	R
			B2CLEE		9.8	LT	.3800	UGG	
			B2EHP		9.8	LT	.6500	UGG	
			CHRY		9.8	LT	.1900	UGG	
			CLDAN		9.8	LT	.8100	UGG	
			CL6BZ		9.8	LT	.3500	UGG	
			CL6CP		9.8	ND	.3300	UGG	R
			CL6ET		9.8	LT	.1400	UGG	
			DBAHA		9.8	LT	.5700	UGG	
			DBHC		9.8	LT	.5700	UGG	
			DBZFUR		9.8	ND	.3300	UGG	R
			DEP		9.8	ND	.3300	UGG	R

2552

DLDRN	9.8	LT	.8600	UGG	
DMP	9.8	ND	.3300	UGG	R
DNBP	9.8	ND	.3300	UGG	R
DNOP	9.8	LT	.3500	UGG	
ENDRN	9.8	LT	.3800	UGG	
ENDRNK	9.8	ND	1.0000	UGG	R
ESFS04	9.8	ND	1.0000	UGG	R
FANT	9.8	LT	.2100	UGG	
FLRENE	9.8	ND	.3300	UGG	R
HCB0	9.8	LT	.2900	UGG	
HPCL	9.8	LT	.2700	UGG	
ICDPYR	9.8	LT	.4500	UGG	
ISOPHR	9.8	ND	.3300	UGG	R
LIN	9.8	LT	.3000	UGG	
MEXCLR	9.8	ND	5.0000	UGG	R
NAP	9.8	LT	.2800	UGG	
NB	9.8	ND	.3300	UGG	R
NNDNPA	9.8	LT	.1100	UGG	
NNDPA	9.8	ND	.3300	UGG	R
PCB016	9.8	ND	5.0000	UGG	R
PCB221	9.8	ND	5.0000	UGG	R
PCB232	9.8	ND	5.0000	UGG	R
PCB242	9.8	ND	5.0000	UGG	R
PCB248	9.8	ND	5.0000	UGG	R
PCB254	9.8	ND	10.0000	UGG	R
PCB260	9.8	ND	10.0000	UGG	R
PCP	9.8	ND	2.0000	UGG	R
PHANTR	9.8	LT	1.6000	UGG	
PHENOL	9.8	ND	.3300	UGG	R
PPDD	9.8	LT	.3900	UGG	
PPDDE	9.8	LT	.4000	UGG	
PPDDT	9.8	LT	.4800	UGG	
PYR	9.8	LT	.5300	UGG	
TXPHEN	9.8	ND	10.0000	UGG	R
UNK527	9.8		.6000	UGG	
UNK528	9.8		.9320	UGG	
UNK530	9.8		.2950	UGG	
UNK532	9.8		9.3500	UGG	
UNK534	9.8		.4140	UGG	
UNK536	9.8		15.9000	UGG	
UNK537	9.8		.8680	UGG	
UNK538	9.8		2.8400	UGG	D
UNK538	9.8		.8840	UGG	
UNK539	9.8		3.9500	UGG	
UNK540	9.8		.2600	UGG	
UNK544	9.8		.4470	UGG	
UNK545	9.8		2.3900	UGG	
UNK548	9.8		.5040	UGG	
UNK550	9.8		.2950	UGG	
UNK552	9.8		.3210	UGG	
UNK553	9.8		1.3200	UGG	
UNK576	9.8		.2540	UGG	
UNK580	9.8		.2130	UGG	
UNK582	9.8		.2700	UGG	
12DCLB	9.8	LT	.3300	UGG	
124TCB-	9.8	LT	.1700	UGG	
13DCLB	9.8	LT	.3000	UGG	

2552

14DCLB	9.8	LT	.2900	UGG	
2CLP	9.8	ND	.3300	UGG	R
2CNAP	9.8	LT	.3200	UGG	
2MNAP	9.8	ND	.3300	UGG	R
2MP	9.8	ND	.3300	UGG	R
2NANIL	9.8	ND	2.0000	UGG	R
2NP	9.8	ND	.3300	UGG	R
24DCLP	9.8	ND	.3300	UGG	R
24DMPN	9.8	ND	.3300	UGG	R
24DNP	9.8	ND	2.0000	UGG	R
24DNT	9.8	LT	.4600	UGG	
245TCP	9.8	ND	2.0000	UGG	R
246TCP	9.8	ND	.3300	UGG	R
26DNT	9.8	LT	.2000	UGG	
3NANIL	9.8	ND	2.0000	UGG	R
33DCBD	9.8	ND	.7000	UGG	R
4BRPPE	9.8	ND	.3300	UGG	R
4CANIL	9.8	ND	.2800	UGG	R
4CLPPE	9.8	ND	.3300	UGG	R
4CL3C	9.8	ND	.2900	UGG	R
4MP	9.8	ND	.3300	UGG	R
4NANIL	9.8	ND	2.0000	UGG	R
4NP	9.8	ND	2.0000	UGG	R
46DN2C	9.8	ND	2.0000	UGG	R
ACET	9.8	ND	.0100	UGG	R
BRDCLM	9.8	ND	.0050	UGG	R
CCL4	9.8	LT	.0020	UGG	
CHBR3	9.8	LT	.0039	UGG	
CHCL3	9.8	LT	.0150	UGG	
CH2CL2	9.8	ND	.0100	UGG	R
CH3BR	9.8	ND	.0100	UGG	R
CH3CL	9.8	LT	.0045	UGG	
CLC6H5	9.8	LT	.0020	UGG	
CS2	9.8	ND	.0050	UGG	R
C13DCP	9.8	LT	.0028	UGG	
C2AVE	9.8	ND	.0100	UGG	R
C2H3CL	9.8	LT	.0078	UGG	
C2H5CL	9.8	LT	.0100	UGG	
C6H6	9.8	LT	.0048	UGG	
DBRCLM	9.8	LT	.0023	UGG	
ETC6H5	9.8	LT	.0100	UGG	
MEC6H5	9.8	LT	.0062	UGG	
MEK	9.8	ND	.0100	UGG	R
MIBK	9.8	ND	.0100	UGG	R
MNBK	9.8	ND	.0100	UGG	R
STYR	9.8	ND	.0050	UGG	R
TCLEA	9.8	LT	.0028	UGG	
TCLLE	9.8	LT	.0079	UGG	
TRCLE	9.8	LT	.0020	UGG	
T13DCP	9.8	LT	.0020	UGG	
XYLEN	9.8	ND	.0050	UGG	R
11DCE	9.8	LT	.0120	UGG	
11DCL	9.8	LT	.0073	UGG	
111TCE	9.8	LT	.0059	UGG	
112TCE	9.8	LT	.0028	UGG	
12DCE	9.8	LT	.0061	UGG	
12DCL	9.8	LT	.0048	UGG	

LM12

2552

12DCLP
OILGR

00

9.8
1.0

LT

.0100 UGG
287.0000 UGG

C-90

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/09/88	ME	HG	JB09	3.0		.0655	UGG	
			AS	JD11	2.9		42.0000	UGG	
			SB		2.9		24.0000	UGG	
			AG	JS05	3.0	LT	.6990	UGG	
			BA		3.0		130.0000	UGG	
			BE		3.0		.6000	UGG	
			CD		3.0		1.5100	UGG	
			CR		3.0		26.7000	UGG	
			CU		3.0		430.0000	UGG	
			FE		3.0		12999.9999	UGG	
			MN		3.0	LT	292.0000	UGG	
			NI		3.0		39.0000	UGG	
			PB		3.0		560.0000	UGG	
			SE		3.0	LT	92.4000	UGG	
			TL		3.0	LT	67.6000	UGG	
			ZN		3.0		1400.0000	UGG	
			SO4	KT03	3.0		260.0000	UGG	
			ABHC	LM11	2.9	ND	.5000	UGG	R
			AENSLF		2.9	ND	.5000	UGG	R
			ALDRN		2.9	LT	.4200	UGG	
			ANAPNE		2.9	LT	.3400	UGG	
			ANAPYL		2.9	LT	.3100	UGG	
			ANTHRC		2.9	LT	.2900	UGG	
			BAANTR		2.9	LT	.2700	UGG	
			BAPYR		2.9		.3780	UGG	
			BBFANT		2.9	LT	.2500	UGG	
			BBHC		2.9	LT	.3300	UGG	
			BBZP		2.9	ND	.3300	UGG	R
			BENSLF		2.9	ND	1.0000	UGG	R
			BENZOA		2.9	ND	2.0000	UGG	R
			BGHIPI		2.9	LT	.5200	UGG	
			BKFANT		2.9	LT	.2200	UGG	
			BZALC		2.9	ND	.3300	UGG	R
			B2CEXM		2.9	ND	.3300	UGG	R
			B2CIPE		2.9	ND	.3300	UGG	R
			B2CLEE		2.9	LT	.3800	UGG	
			B2EHP		2.9	LT	.6500	UGG	
			CHRY		2.9		.5620	UGG	
			CLDAN		2.9	LT	.8100	UGG	
			CL6BZ		2.9	LT	.3500	UGG	
			CL6CP		2.9	ND	.3300	UGG	R
			CL6ET		2.9	LT	.1400	UGG	
			DBAHA		2.9	LT	.5700	UGG	
			DBHC		2.9	LT	.5700	UGG	
			DBZFUR		2.9	ND	.3300	UGG	R
			DEP		2.9	ND	.3300	UGG	R

2553

DLDRN	2.9	LT	.8600	UGG	
DMP	2.9	ND	.3300	UGG	R
DNBP	2.9	ND	.3300	UGG	R
DNOP	2.9	LT	.3500	UGG	
ENDRN	2.9	LT	.3800	UGG	
ENDRNK	2.9	ND	1.0000	UGG	R
ESFSO4	2.9	ND	1.0000	UGG	R
FANT	2.9		.5290	UGG	
FLRENE	2.9	ND	.3300	UGG	R
HCB	2.9	LT	.2900	UGG	
HPCL	2.9	LT	.2700	UGG	
ICDPYR	2.9	LT	.4500	UGG	
ISOPHR	2.9	ND	.3300	UGG	R
LIN	2.9	LT	.3000	UGG	
MEXCLR	2.9	ND	5.0000	UGG	R
NAP	2.9	LT	.2800	UGG	
NB	2.9	ND	.3300	UGG	R
NNDNPA	2.9	LT	.1100	UGG	
NNDPA	2.9	ND	.3300	UGG	R
PCB016	2.9	ND	5.0000	UGG	R
PCB221	2.9	ND	5.0000	UGG	R
PCB232	2.9	ND	5.0000	UGG	R
PCB242	2.9	ND	5.0000	UGG	R
PCB248	2.9	ND	5.0000	UGG	R
PCB254	2.9	ND	10.0000	UGG	R
PCB260	2.9	ND	10.0000	UGG	R
PCP	2.9	ND	2.0000	UGG	R
PHANTR	2.9	LT	1.6000	UGG	
PHENOL	2.9	ND	.3300	UGG	R
PPDD	2.9	LT	.3900	UGG	
PPDDE	2.9	LT	.4000	UGG	
PPDDT	2.9	LT	.4800	UGG	
PYR	2.9		.5540	UGG	
TXPHEN	2.9	ND	10.0000	UGG	R
UNK527	2.9		.2920	UGG	
UNK528	2.9		1.7700	UGG	
UNK530	2.9		.2780	UGG	
UNK532	2.9		8.8400	UGG	
UNK534	2.9		.2950	UGG	
UNK535	2.9		.3310	UGG	
UNK536	2.9		10.9000	UGG	
UNK537	2.9		.8100	UGG	
UNK538	2.9		2.6900	UGG	D
UNK538	2.9		.9230	UGG	
UNK539	2.9		3.7400	UGG	
UNK544	2.9		1.0200	UGG	
UNK545	2.9		2.4600	UGG	
UNK546	2.9		.3060	UGG	
UNK548	2.9		2.6600	UGG	D
UNK548	2.9		.4980	UGG	
UNK552	2.9		.9300	UGG	
UNK553	2.9		1.5900	UGG	
UNK576	2.9		.2900	UGG	
UNK582	2.9		.3600	UGG	
12DCLB	2.9	LT	.3300	UGG	
124TCB	2.9	LT	.1700	UGG	
13DCLB	2.9	LT	.3000	UGG	

2SS3

14DCLB	2.9	LT	.2900	UGG	
2CLP	2.9	ND	.3300	UGG	R
2CNAP	2.9	LT	.3200	UGG	
2MNAP	2.9	ND	.3300	UGG	R
2MP	2.9	ND	.3300	UGG	R
2NANIL	2.9	ND	2.0000	UGG	R
2NP	2.9	ND	.3300	UGG	R
24DCLP	2.9	ND	.3300	UGG	R
24DMPN	2.9	ND	.3300	UGG	R
24DNP	2.9	ND	2.0000	UGG	R
24DNT	2.9	LT	.4600	UGG	
245TCP	2.9	ND	2.0000	UGG	R
246TCP	2.9	ND	.3300	UGG	R
26DNT	2.9	LT	.2000	UGG	
3NANIL	2.9	ND	2.0000	UGG	R
33DCBD	2.9	ND	.7000	UGG	R
4BRPPE	2.9	ND	.3300	UGG	R
4CANIL	2.9	ND	.2800	UGG	R
4CLPPE	2.9	ND	.3300	UGG	R
4CL3C	2.9	ND	.2900	UGG	R
4MP	2.9	ND	.3300	UGG	R
4NANIL	2.9	ND	2.0000	UGG	R
4NP	2.9	ND	2.0000	UGG	R
46DN2C	2.9	ND	2.0000	UGG	R
ACET	2.9	ND	.0100	UGG	R
BRDCLM	2.9	ND	.0050	UGG	R
CCL4	2.9	LT	.0020	UGG	
CHBR3	2.9	LT	.0039	UGG	
CHCL3	2.9	LT	.0150	UGG	
CH2CL2	2.9	ND	.0100	UGG	R
CH3BR	2.9	ND	.0100	UGG	R
CH3CL	2.9	LT	.0045	UGG	
CLC6H5	2.9	LT	.0020	UGG	
CS2	2.9	ND	.0050	UGG	R
C13DCP	2.9	LT	.0028	UGG	
C2AVE	2.9	ND	.0100	UGG	R
C2H3CL	2.9	LT	.0078	UGG	
C2H5CL	2.9	LT	.0100	UGG	
C6H6	2.9	LT	.0048	UGG	
DBRCLM	2.9	LT	.0023	UGG	
ETC6H5	2.9	LT	.0100	UGG	
MEC6H5	2.9	LT	.0062	UGG	
MEK	2.9	ND	.0100	UGG	R
MIBK	2.9	ND	.0100	UGG	R
MNBK	2.9	ND	.0100	UGG	R
STYR	2.9	ND	.0050	UGG	R
TCLEA	2.9	LT	.0028	UGG	
TCLEE	2.9	LT	.0079	UGG	
TRCLE	2.9	LT	.0020	UGG	
T13DCP	2.9	LT	.0020	UGG	
XYLEN	2.9	ND	.0050	UGG	R
11DCE	2.9	LT	.0120	UGG	
11DCLE	2.9	LT	.0073	UGG	
111TCE	2.9	LT	.0059	UGG	
112TCE	2.9	LT	.0028	UGG	
12DCE	2.9	LT	.0061	UGG	
12DCLE	2.9	LT	.0048	UGG	

LM12

2553

12DCLP
OILGR

00

2.9
3.0

LT

.0100 UGG
2590.0000 UGG

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	HG	JB09	.9		1.4000	UGG	
			AS	JD11	8.5		6.0000	UGG	
			AG	JS05	.9	LT	.6990	UGG	
			BA		.9		98.0000	UGG	
			CD		.9		5.9500	UGG	
			CR		.9		18.8000	UGG	
			CU		.9		120.0000	UGG	
			FE		.9		38000.0000	UGG	
			MN		.9	LT	292.0000	UGG	
			SE		.9	LT	92.4000	UGG	
			ZN		.9		310.0000	UGG	
			SO4	KTO3	1.0		28.8000	UGG	
			ABHC	LM11	.9	ND	.5000	UGG	R
			AENSLF		.9	ND	.5000	UGG	R
			ALDRN		.9	LT	.4200	UGG	
			ANAPNE		.9		.4450	UGG	
			ANAPYL		.9	LT	.3100	UGG	
			ANTHRC		.9		1.8900	UGG	
			BAANTR		.9		10.4000	UGG	
			BAPYR		.9		9.3200	UGG	
			BBFANT		.9		8.1800	UGG	
			BBHC		.9	LT	.3300	UGG	
			BBZP		.9	ND	.3300	UGG	R
			BENSLF		.9	ND	1.0000	UGG	R
			BENZOA		.9	ND	2.0000	UGG	R
			BGHIPY		.9	LT	.5200	UGG	
			BKFANT		.9	LT	.2200	UGG	
			BZALC		.9	ND	.3300	UGG	R
			B2CEXM		.9	ND	.3300	UGG	R
			B2CIPE		.9	ND	.3300	UGG	R
			B2CLEE		.9	LT	.3800	UGG	
			B2EHP		.9	LT	.6500	UGG	
			CHRY		.9		12.3000	UGG	
			CLDAN		.9	LT	.8100	UGG	
			CL6BZ		.9	LT	.3500	UGG	
			CL6CP		.9	ND	.3300	UGG	R
			CL6ET		.9	LT	.1400	UGG	
			DBAHA		.9	LT	.5700	UGG	
			DBHC		.9	LT	.5700	UGG	
			DBZFUR		.9	ND	.3300	UGG	R
			DEP		.9	ND	.3300	UGG	R
			DLDRN		.9	LT	.8600	UGG	
			DMP		.9	ND	.3300	UGG	R
			DNBP		.9	ND	.3300	UGG	R
			DNOP		.9	LT	.3500	UGG	
			ENDRN		.9	LT	.3800	UGG	

2354

ENDRNK	.9	ND	1.0000	UGG	R
ESFS04	.9	ND	1.0000	UGG	R
FANT	.9	LT	.2100	UGG	
FLRENE	.9		.4490	UGG	S
HCBD	.9	LT	.2900	UGG	
HPCL	.9	LT	.2700	UGG	
HPCLE	.9	LT	.7400	UGG	
ICDPYR	.9		4.0100	UGG	
ISOPHR	.9	ND	.3300	UGG	R
LIN	.9	LT	.3000	UGG	
MEXCLR	.9	ND	5.0000	UGG	R
NAP	.9	LT	.2800	UGG	
NB	.9	ND	.3300	UGG	R
NNDNPA	.9	LT	.1100	UGG	
NNDPA	.9	ND	.3300	UGG	R
PCB016	.9	ND	5.0000	UGG	R
PCB221	.9	ND	5.0000	UGG	R
PCB232	.9	ND	5.0000	UGG	R
PCB242	.9	ND	5.0000	UGG	R
PCB248	.9	ND	5.0000	UGG	R
PCB254	.9	ND	10.0000	UGG	R
PCB260	.9	ND	10.0000	UGG	R
PCP	.9	ND	2.0000	UGG	R
PHANTR	.9	LT	1.6000	UGG	
PHENOL	.9	ND	.3300	UGG	R
PPDDD	.9	LT	.3900	UGG	
PPDDE	.9	LT	.4000	UGG	
PPDDT	.9	LT	.4800	UGG	
PYR	.9	LT	.5300	UGG	
TXPHEN	.9	ND	10.0000	UGG	R
UNK535	.9		1.2700	UGG	
UNK538	.9		29.3000	UGG	
UNK539	.9		.4400	UGG	
UNK539	.9		.5730	UGG	D
UNK543	.9		.6710	UGG	
UNK544	.9		.8520	UGG	
UNK546	.9		.5940	UGG	
UNK549	.9		.4110	UGG	
UNK554	.9		1.0400	UGG	
UNK580	.9		.4960	UGG	
UNK591	.9		.4050	UGG	
UNK596	.9		.3770	UGG	
UNK596	.9		.3950	UGG	D
UNK597	.9		.4540	UGG	
UNK604	.9		.3160	UGG	
UNK606	.9		.7430	UGG	
UNK607	.9		.6640	UGG	
UNK607	.9		.8630	UGG	D
UNK611	.9		.5640	UGG	
UNK612	.9		.4510	UGG	
12DCLB	.9	LT	.3300	UGG	
124TCB	.9	LT	.1700	UGG	
13DCLB	.9	LT	.3000	UGG	
14DCLB	.9	LT	.2900	UGG	
2CLP	.9	ND	.3300	UGG	R
2CNAP	.9	LT	.3200	UGG	
2MNAP	.9	ND	.3300	UGG	R

2554

2MP	.9	ND	.3300	UGG	R
2NANIL	.9	ND	2.0000	UGG	R
2NP	.9	ND	.3300	UGG	R
24DCLP	.9	ND	.3300	UGG	R
24DMPN	.9	ND	.3300	UGG	R
24DNP	.9	ND	2.0000	UGG	R
24DNT	.9	LT	.4600	UGG	
245TCP	.9	ND	2.0000	UGG	R
246TCP	.9	ND	.3300	UGG	R
26DNT	.9	LT	.2000	UGG	
3NANIL	.9	ND	2.0000	UGG	R
33DCBD	.9	ND	.7000	UGG	R
4BRPPE	.9	ND	.3300	UGG	R
4CANIL	.9	ND	.2800	UGG	R
4CLPPE	.9	ND	.3300	UGG	R
4CL3C	.9	ND	.2900	UGG	R
4MP	.9	ND	.3300	UGG	R
4NANIL	.9	ND	2.0000	UGG	R
4NP	.9	ND	2.0000	UGG	R
46DN2C	.9	ND	2.0000	UGG	R
ACET	.9	ND	.0100	UGG	R
BDRCLM	.9	ND	.0050	UGG	R
CCL4	.9	LT	.0020	UGG	
CHBR3	.9	LT	.0039	UGG	
CHCL3	.9	LT	.0150	UGG	
CH2CL2	.9	ND	.0500	UGG	R
CH3BR	.9	ND	.0100	UGG	R
CH3CL	.9	LT	.0045	UGG	
CLC6H5	.9	LT	.0020	UGG	
CS2	.9	ND	.0050	UGG	R
C13DCP	.9	LT	.0028	UGG	
C2AVE	.9	ND	.0100	UGG	R
C2H3CL	.9	LT	.0078	UGG	
C2H5CL	.9	LT	.0100	UGG	
C6H6	.9	LT	.0048	UGG	
DBRCLM	.9	LT	.0023	UGG	
ETC6H5	.9	LT	.0100	UGG	
MEC6H5	.9	LT	.0062	UGG	
MEK	.9	ND	.0100	UGG	R
MIBK	.9	ND	.0100	UGG	R
MNBK	.9	ND	.0100	UGG	R
STYR	.9	ND	.0050	UGG	R
TCLEA	.9	LT	.0028	UGG	
TCLEE	.9	LT	.0079	UGG	
TRCLE	.9	LT	.0020	UGG	
T13DCP	.9	LT	.0020	UGG	
XYLEN	.9	ND	.0050	UGG	R
11DCE	.9	LT	.0120	UGG	
11DCL	.9	LT	.0073	UGG	
111TCE	.9	LT	.0059	UGG	
112TCE	.9	LT	.0028	UGG	
12DCE	.9	LT	.0061	UGG	
12DCL	.9	LT	.0048	UGG	
12DCLP	.9	LT	.0100	UGG	
OILGR	.9	ND	5000.0000	UGG	R

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS5
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	HG	JB09	3.0		2.2000	UGG	
			AS	JD11	2.9		12.0000	UGG	
			AG	JS05	3.0	LT	.6990	UGG	
			BA		3.0		510.0000	UGG	
			CD		3.0	LT	.9510	UGG	
			CR		3.0		73.4000	UGG	
			CU		3.0		1100.0000	UGG	
			FE		3.0		150000.0000	UGG	
			MN		3.0		891.0000	UGG	
			SE		3.0	LT	92.4000	UGG	
			ZN		3.0		5300.0000	UGG	
			SO4	KTO3	1.0		17.4000	UGG	
			ABHC	LM11	3.0	ND	.5000	UGG	R
			AENSLF		3.0	ND	.5000	UGG	R
			ALDRN		3.0	LT	.4200	UGG	
			ANAPNE		3.0		.4150	UGG	
			ANAPYL		3.0	LT	.3100	UGG	
			ANTHRC		3.0		.6890	UGG	
			BAANTR		3.0		2.5200	UGG	
			BAPYR		3.0		2.2600	UGG	
			BBFANT		3.0		2.1400	UGG	
			BBHC		3.0	LT	.3300	UGG	
			BBZP		3.0	ND	.3300	UGG	R
			BENSLF		3.0	ND	1.0000	UGG	R
			BENZOA		3.0	ND	2.0000	UGG	R
			BGHIPY		3.0	LT	.5200	UGG	
			BKFANT		3.0	LT	.2200	UGG	
			BZALC		3.0	ND	.3300	UGG	R
			B2CEXM		3.0	ND	.3300	UGG	R
			B2CIPE		3.0	ND	.3300	UGG	R
			B2CLEE		3.0	LT	.3800	UGG	
			B2EHP		3.0	LT	.6500	UGG	
			CHRY		3.0		2.9800	UGG	
			CLDAN		3.0	LT	.8100	UGG	
			CL6BZ		3.0	LT	.3500	UGG	
			CL6CP		3.0	ND	.3300	UGG	R
			CL6ET		3.0	LT	.1400	UGG	
			DBAHA		3.0	LT	.5700	UGG	
			DBHC		3.0	LT	.5700	UGG	
			DBZFUR		3.0	ND	.3300	UGG	R
			DEP		3.0	ND	.3300	UGG	R
			DLDRN		3.0	LT	.8600	UGG	
			DMP		3.0	ND	.3300	UGG	R
			DNBP		3.0	ND	.3300	UGG	R
			DNOP		3.0	LT	.3500	UGG	
			ENDRN		3.0	LT	.3800	UGG	

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ENDRNK	3.0	ND	1.0000	UGG	R
ESFS04	3.0	ND	1.0000	UGG	R
FANT	3.0		3.4000	UGG	
FLRENE	3.0		.3460	UGG	S
HCBD	3.0	LT	.2900	UGG	
HPCL	3.0	LT	.2700	UGG	
HPCLE	3.0	LT	.7400	UGG	
ICDPYR	3.0		1.2100	UGG	
ISOPHR	3.0	ND	.3300	UGG	R
LIN	3.0	LT	.3000	UGG	
MEXCLR	3.0	ND	5.0000	UGG	R
NAP	3.0		.3250	UGG	
NB	3.0	ND	.3300	UGG	R
NNDNPA	3.0	LT	.1100	UGG	
NNDPA	3.0	ND	.3300	UGG	R
PCBO16	3.0	ND	5.0000	UGG	R
PCB221	3.0	ND	5.0000	UGG	R
PCB232	3.0	ND	5.0000	UGG	R
PCB242	3.0	ND	5.0000	UGG	R
PCB248	3.0	ND	5.0000	UGG	R
PCB254	3.0	ND	10.0000	UGG	R
PCB260	3.0	ND	10.0000	UGG	R
PCP	3.0	ND	2.0000	UGG	R
PHANTR	3.0	LT	1.6000	UGG	
PHENOL	3.0	ND	.3300	UGG	R
PPDDO	3.0	LT	.3900	UGG	
PPDDE	3.0	LT	.4000	UGG	
PPDOT	3.0	LT	.4800	UGG	
PYR	3.0	LT	.5300	UGG	
TXPHEN	3.0	ND	10.0000	UGG	R
UNK533	3.0		.2230	UGG	
UNK535	3.0		1.6400	UGG	
UNK538	3.0		34.5000	UGG	
UNK538	3.0		.3300	UGG	D
UNK539	3.0		.2590	UGG	
UNK539	3.0		.5830	UGG	D
UNK540	3.0		.7790	UGG	
UNK543	3.0		.8530	UGG	
UNK544	3.0		.7020	UGG	
UNK546	3.0		.7890	UGG	
UNK548	3.0		.2530	UGG	
UNK549	3.0		.5110	UGG	
UNK554	3.0		1.8700	UGG	
UNK570	3.0		.2250	UGG	
UNK576	3.0		.3450	UGG	
UNK582	3.0		.2370	UGG	
12DCLB	3.0	LT	.3300	UGG	
124TCB	3.0	LT	.1700	UGG	
13DCLB	3.0	LT	.3000	UGG	
14DCLB	3.0	LT	.2900	UGG	
2CLP	3.0	ND	.3300	UGG	R
2CNAP	3.0	LT	.3200	UGG	
2MNAP	3.0	ND	.3300	UGG	R
2MP	3.0	ND	.3300	UGG	R
2NANIL	3.0	ND	2.0000	UGG	R
2NP	3.0	ND	.3300	UGG	R
24DCLP	3.0	ND	.3300	UGG	R

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24DMPN	3.0	ND	.3300	UGG	R	
24DNP	3.0	ND	2.0000	UGG	R	
24DNT	3.0	LT	.4600	UGG		
245TCP	3.0	ND	2.0000	UGG	R	
246TCP	3.0	ND	.3300	UGG	R	
26DNT	3.0	LT	.2000	UGG		
3NANIL	3.0	ND	2.0000	UGG	R	
33DCBD	3.0	ND	.7000	UGG	R	
4BRPPE	3.0	ND	.3300	UGG	R	
4CANIL	3.0	ND	.2800	UGG	R	
4CLPPE	3.0	ND	.3300	UGG	R	
4CL3C	3.0	ND	.2900	UGG	R	
4MP	3.0	ND	.3300	UGG	R	
4NANIL	3.0	ND	2.0000	UGG	R	
4NP	3.0	ND	2.0000	UGG	R	
46DN2C	3.0	ND	2.0000	UGG	R	
ACET	LM12	3.0	ND	.0100	UGG	R
BDRCLM	3.0	ND	.0050	UGG	R	
CCL4	3.0	LT	.0020	UGG		
CHBR3	3.0	LT	.0039	UGG		
CHCL3	3.0	LT	.0150	UGG		
CH2CL2	3.0	ND	.0500	UGG	R	
CH3BR	3.0	ND	.0100	UGG	R	
CH3CL	3.0	LT	.0045	UGG		
CLC6H5	3.0	LT	.0020	UGG		
CS2	3.0	ND	.0050	UGG	R	
C13DCP	3.0	LT	.0028	UGG		
C2AVE	3.0	ND	.0100	UGG	R	
C2H3CL	3.0	LT	.0078	UGG		
C2H5CL	3.0	LT	.0100	UGG		
C6H6	3.0	LT	.0048	UGG		
DBRCLM	3.0	LT	.0023	UGG		
ETC6H5	3.0	LT	.0100	UGG		
MEC6H5	3.0	LT	.0062	UGG		
MEK	3.0	ND	.0100	UGG	R	
MIBK	3.0	ND	.0100	UGG	R	
MNBK	3.0	ND	.0100	UGG	R	
STYR	3.0	ND	.0050	UGG	R	
TCLEA	3.0	LT	.0028	UGG		
TCLEE	3.0	LT	.0079	UGG		
TRCLE	3.0	LT	.0020	UGG		
T13DCP	3.0	LT	.0020	UGG		
XYLEN	3.0	ND	.0050	UGG	R	
11DCE	3.0	LT	.0120	UGG		
11DCLE	3.0	LT	.0073	UGG		
111TCE	3.0	LT	.0059	UGG		
112TCE	3.0	LT	.0028	UGG		
12DCE	3.0	LT	.0061	UGG		
12DCLE	3.0	LT	.0048	UGG		
12DCLP	3.0	LT	.0100	UGG		
OILGR	OO	3.0	ND	5000.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 2SS6
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	HG	JB09	3.0	LT	.0179	UGG	
			HG		3.0	LT	.0179	UGG	
			AS	JD11	2.9		25.0000	UGG	
			AS		2.9	LT	2.2200	UGG	
			AG	JS05	3.0	LT	.6990	UGG	
			AG		3.0	LT	.6990	UGG	
			BA		3.0		26.6000	UGG	
			BA		3.0		25.2000	UGG	
			CD		3.0	LT	.9510	UGG	
			CD		3.0	LT	.9510	UGG	
			CR		3.0		13.9000	UGG	
			CR		3.0		15.8000	UGG	
			CU		3.0		40.7000	UGG	
			CU		3.0		36.7000	UGG	
			FE		3.0		15999.9999	UGG	
			FE		3.0		15000.0000	UGG	
			MN		3.0	LT	292.0000	UGG	
			MN		3.0	LT	292.0000	UGG	
			SE		3.0	LT	92.4000	UGG	
			SE		3.0	LT	92.4000	UGG	
			ZN		3.0		113.0000	UGG	
			ZN		3.0		93.5000	UGG	
			CYN	KF12	3.0	LT	19.8000	UGG	
			SO4	KT03	3.0		28.7000	UGG	
			SO4		3.0		40.7000	UGG	
			ABHC	LM11	3.0	ND	.5000	UGG	R
			ABHC		3.0	ND	.5000	UGG	R
			AENSLF		3.0	ND	.5000	UGG	R
			AENSLF		3.0	ND	.5000	UGG	R
			ALDRN		3.0	LT	.4200	UGG	
			ALDRN		3.0	LT	.4200	UGG	
			ANAPNE		3.0	LT	.3400	UGG	
			ANAPNE		3.0	LT	.3400	UGG	
			ANAPYL		3.0	LT	.3100	UGG	
			ANAPYL		3.0	LT	.3100	UGG	
			ANTHRC		3.0	LT	.2900	UGG	
			ANTHRC		3.0	LT	.2900	UGG	
			BAANTR		3.0	LT	.2700	UGG	
			BAANTR		3.0	LT	.2700	UGG	
			BAPYR		3.0		.3990	UGG	
			BAPYR		3.0	LT	.1600	UGG	
			BBFANT		3.0	LT	.2500	UGG	
			BBFANT		3.0	LT	.2500	UGG	
			BBHC		3.0	LT	.3300	UGG	
			BBHC		3.0	LT	.3300	UGG	
			BBZP		3.0	ND	.3300	UGG	R

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BBZP	3.0	ND	.3300	UGG	R
BENSLF	3.0	ND	1.0000	UGG	R
BENSLF	3.0	ND	1.0000	UGG	R
BENZOA	3.0	ND	2.0000	UGG	R
BENZOA	3.0	ND	2.0000	UGG	R
BGHIPI	3.0	LT	.5200	UGG	
BGHIPI	3.0	LT	.5200	UGG	
BKFANT	3.0	LT	.2200	UGG	
BKFANT	3.0	LT	.2200	UGG	
BZALC	3.0	ND	.3300	UGG	R
BZALC	3.0	ND	.3300	UGG	R
B2CEXM	3.0	ND	.3300	UGG	R
B2CEXM	3.0	ND	.3300	UGG	R
B2CIPE	3.0	ND	.3300	UGG	R
B2CIPE	3.0	ND	.3300	UGG	R
B2CLEE	3.0	LT	.3800	UGG	
B2CLEE	3.0	LT	.3800	UGG	
B2EHP	3.0	LT	.6500	UGG	
B2EHP	3.0	LT	.6500	UGG	
CHRY	3.0	LT	.1900	UGG	
CHRY	3.0		.3240	UGG	
CLDAN	3.0	LT	.8100	UGG	
CLDAN	3.0	LT	.8100	UGG	
CL6BZ	3.0	LT	.3500	UGG	
CL6BZ	3.0	LT	.3500	UGG	
CL6CP	3.0	ND	.3300	UGG	R
CL6CP	3.0	ND	.3300	UGG	R
CL6ET	3.0	LT	.1400	UGG	
CL6ET	3.0	LT	.1400	UGG	
DBAHA	3.0	LT	.5700	UGG	
DBAHA	3.0	LT	.5700	UGG	
DBHC	3.0	LT	.5700	UGG	
DBHC	3.0	LT	.5700	UGG	
DBZFUR	3.0	ND	.3300	UGG	R
DBZFUR	3.0	ND	.3300	UGG	R
DEP	3.0	ND	.3300	UGG	R
DEP	3.0	ND	.3300	UGG	R
DLDRN	3.0	LT	.8600	UGG	
DLDRN	3.0	LT	.8600	UGG	
DMP	3.0	ND	.3300	UGG	R
DMP	3.0	ND	.3300	UGG	R
DNBP	3.0	ND	.3300	UGG	R
DNBP	3.0	ND	.3300	UGG	R
DNOP	3.0	LT	.3500	UGG	
DNOP	3.0	LT	.3500	UGG	
ENDRN	3.0	LT	.3800	UGG	
ENDRN	3.0	LT	.3800	UGG	
ENDRNK	3.0	ND	1.0000	UGG	R
ENDRNK	3.0	ND	1.0000	UGG	R
ESFSO4	3.0	ND	1.0000	UGG	R
ESFSO4	3.0	ND	1.0000	UGG	R
FANT	3.0	LT	.2100	UGG	
FANT	3.0	LT	.2100	UGG	
FLRENE	3.0	ND	.3300	UGG	R
FLRENE	3.0	ND	.3300	UGG	R
HCBD	3.0	LT	.2900	UGG	
HCBD	3.0	LT	.2900	UGG	

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HPCL	3.0	LT	.2700	UGG	
HPCL	3.0	LT	.2700	UGG	
HPCLE	3.0	LT	.7400	UGG	
HPCLE	3.0	LT	.7400	UGG	
ICDPYR	3.0	LT	.4500	UGG	
ICDPYR	3.0	LT	.4500	UGG	
ISOPHR	3.0	ND	.3300	UGG	R
ISOPHR	3.0	ND	.3300	UGG	R
LIN	3.0	LT	.3000	UGG	
LIN	3.0	LT	.3000	UGG	
MEXCLR	3.0	ND	5.0000	UGG	R
MEXCLR	3.0	ND	5.0000	UGG	R
NAP	3.0	LT	.2800	UGG	
NAP	3.0	LT	.2800	UGG	
NB	3.0	ND	.3300	UGG	R
NB	3.0	ND	.3300	UGG	R
NNDNPA	3.0	LT	.1100	UGG	
NNDNPA	3.0	LT	.1100	UGG	
NNDPA	3.0	ND	.3300	UGG	R
NNDPA	3.0	ND	.3300	UGG	R
PCB016	3.0	ND	5.0000	UGG	R
PCB016	3.0	ND	5.0000	UGG	R
PCB221	3.0	ND	5.0000	UGG	R
PCB221	3.0	ND	5.0000	UGG	R
PCB232	3.0	ND	5.0000	UGG	R
PCB232	3.0	ND	5.0000	UGG	R
PCB242	3.0	ND	5.0000	UGG	R
PCB242	3.0	ND	5.0000	UGG	R
PCB248	3.0	ND	5.0000	UGG	R
PCB248	3.0	ND	5.0000	UGG	R
PCB254	3.0	ND	10.0000	UGG	R
PCB254	3.0	ND	10.0000	UGG	R
PCB260	3.0	ND	10.0000	UGG	R
PCB260	3.0	ND	10.0000	UGG	R
PCP	3.0	ND	2.0000	UGG	R
PCP	3.0	ND	2.0000	UGG	R
PHANTR	3.0	LT	1.6000	UGG	
PHANTR	3.0	LT	1.6000	UGG	
PHENOL	3.0	ND	.3300	UGG	R
PHENOL	3.0	ND	.3300	UGG	R
PPDDD	3.0	LT	.3900	UGG	
PPDDD	3.0	LT	.3900	UGG	
PPDDE	3.0	LT	.4000	UGG	
PPDDE	3.0	LT	.4000	UGG	
PPDDT	3.0	LT	.4800	UGG	
PPDDT	3.0	LT	.4800	UGG	
PYR	3.0	LT	.5300	UGG	
PYR	3.0	LT	.5300	UGG	
TXPHEN	3.0	ND	10.0000	UGG	R
TXPHEN	3.0	ND	10.0000	UGG	R
UNK535	3.0		7.6600	UGG	
UNK535	3.0		.5430	UGG	
UNK538	3.0		30.9000	UGG	
UNK538	3.0		23.4000	UGG	
UNK539	3.0		.3730	UGG	D
UNK539	3.0		.3190	UGG	
UNK539	3.0		.3810	UGG	D

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UNK539	3.0		.2710	UGG	
UNK543	3.0		.4700	UGG	
UNK543	3.0		.5220	UGG	
UNK544	3.0		.5580	UGG	
UNK544	3.0		.7350	UGG	
UNK546	3.0		.3030	UGG	
UNK546	3.0		.3470	UGG	
UNK549	3.0		.4120	UGG	
UNK549	3.0		.3080	UGG	
UNK553	3.0		.4560	UGG	
UNK553	3.0		.4260	UGG	
UNK554	3.0		.4710	UGG	
UNK554	3.0		.4330	UGG	
UNK576	3.0		.0342	UGG	
UNK582	3.0		.0560	UGG	
UNK605	3.0		.0446	UGG	
12DCLB	3.0	LT	.3300	UGG	
12DCLB	3.0	LT	.3300	UGG	
124TCB	3.0	LT	.1700	UGG	
124TCB	3.0	LT	.1700	UGG	
13DCLB	3.0	LT	.3000	UGG	
13DCLB	3.0	LT	.3000	UGG	
14DCLB	3.0	LT	.2900	UGG	
14DCLB	3.0	LT	.2900	UGG	
2CLP	3.0	ND	.3300	UGG	R
2CLP	3.0	ND	.3300	UGG	R
2CNAP	3.0	LT	.3200	UGG	
2CNAP	3.0	LT	.3200	UGG	
2MNAP	3.0	ND	.3300	UGG	R
2MNAP	3.0	ND	.3300	UGG	R
2MP	3.0	ND	.3300	UGG	R
2MP	3.0	ND	.3300	UGG	R
2NANIL	3.0	ND	2.0000	UGG	R
2NANIL	3.0	ND	2.0000	UGG	R
2NP	3.0	ND	.3300	UGG	R
2NP	3.0	ND	.3300	UGG	R
24DCLP	3.0	ND	.3300	UGG	R
24DCLP	3.0	ND	.3300	UGG	R
24DMPN	3.0	ND	.3300	UGG	R
24DMPN	3.0	ND	.3300	UGG	R
24DNP	3.0	ND	2.0000	UGG	R
24DNP	3.0	ND	2.0000	UGG	R
24DNT	3.0	LT	.4600	UGG	
24DNT	3.0	LT	.4600	UGG	
245TCP	3.0	ND	2.0000	UGG	R
245TCP	3.0	ND	2.0000	UGG	R
246TCP	3.0	ND	.3300	UGG	R
246TCP	3.0	ND	.3300	UGG	R
26DNT	3.0	LT	.2000	UGG	
26DNT	3.0	LT	.2000	UGG	
3NANIL	3.0	ND	2.0000	UGG	R
3NANIL	3.0	ND	2.0000	UGG	R
33DCBD	3.0	ND	.7000	UGG	R
33DCBD	3.0	ND	.7000	UGG	R
4BRPPE	3.0	ND	.3300	UGG	R
4BRPPE	3.0	ND	.3300	UGG	R
4CANIL	3.0	ND	.2800	UGG	R

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4CANIL	3.0	ND	.2800	UGG	R
4CLPPE	3.0	ND	.3300	UGG	R
4CLPPE	3.0	ND	.3300	UGG	R
4CL3C	3.0	ND	.2900	UGG	R
4CL3C	3.0	ND	.2900	UGG	R
4MP	3.0	ND	.3300	UGG	R
4MP	3.0	ND	.3300	UGG	R
4NANIL	3.0	ND	2.0000	UGG	R
4NANIL	3.0	ND	2.0000	UGG	R
4NP	3.0	ND	2.0000	UGG	R
4NP	3.0	ND	2.0000	UGG	R
46DN2C	3.0	ND	2.0000	UGG	R
46DN2C	3.0	ND	2.0000	UGG	R
ACET	3.0	ND	.0100	UGG	R
ACET	3.0	ND	.0100	UGG	R
BDRCLM	3.0	ND	.0050	UGG	R
BDRCLM	3.0	ND	.0050	UGG	R
CCL4	3.0	LT	.0020	UGG	
CCL4	3.0	LT	.0020	UGG	
CHBR3	3.0	LT	.0039	UGG	
CHBR3	3.0	LT	.0039	UGG	
CHCL3	3.0	LT	.0150	UGG	
CHCL3	3.0	LT	.0150	UGG	
CH2CL2	3.0	ND	.0500	UGG	R
CH2CL2	3.0	ND	.0500	UGG	R
CH3BR	3.0	ND	.0100	UGG	R
CH3BR	3.0	ND	.0100	UGG	R
CH3CL	3.0	LT	.0045	UGG	
CH3CL	3.0	LT	.0045	UGG	
CLC6H5	3.0	LT	.0020	UGG	
CLC6H5	3.0	LT	.0020	UGG	
CS2	3.0	ND	.0050	UGG	R
CS2	3.0	ND	.0050	UGG	R
C13DCP	3.0	LT	.0028	UGG	
C13DCP	3.0	LT	.0028	UGG	
C2AVE	3.0	ND	.0100	UGG	R
C2AVE	3.0	ND	.0100	UGG	R
C2H3CL	3.0	LT	.0078	UGG	
C2H3CL	3.0	LT	.0078	UGG	
C2H5CL	3.0	LT	.0100	UGG	
C2H5CL	3.0	LT	.0100	UGG	
C6H6	3.0	LT	.0048	UGG	
C6H6	3.0	LT	.0048	UGG	
DBRCLM	3.0	LT	.0023	UGG	
DBRCLM	3.0	LT	.0023	UGG	
ETC6H5	3.0	LT	.0100	UGG	
ETC6H5	3.0	LT	.0100	UGG	
MEC6H5	3.0	LT	.0062	UGG	
MEC6H5	3.0	LT	.0062	UGG	
MEK	3.0	ND	.0100	UGG	R
MEK	3.0	ND	.0100	UGG	R
MIBK	3.0	ND	.0100	UGG	R
MIBK	3.0	ND	.0100	UGG	R
MNBK	3.0	ND	.0100	UGG	R
MNBK	3.0	ND	.0100	UGG	R
STYR	3.0	ND	.0050	UGG	R
STYR	3.0	ND	.0050	UGG	R

LM12

2556

TCLEA		3.0	LT	.0028	UGG	
TCLEA		3.0	LT	.0028	UGG	
TCLEE		3.0	LT	.0079	UGG	
TCLEE		3.0	LT	.0079	UGG	
TRCLE		3.0	LT	.0020	UGG	
TRCLE		3.0	LT	.0020	UGG	
T13DCP		3.0	LT	.0020	UGG	
T13DCP		3.0	LT	.0020	UGG	
XYLEN		3.0	ND	.0050	UGG	R
XYLEN		3.0	ND	.0050	UGG	R
11DCE		3.0	LT	.0120	UGG	
11DCE		3.0	LT	.0120	UGG	
11DCLE		3.0	LT	.0073	UGG	
11DCLE		3.0	LT	.0073	UGG	
111TCE		3.0	LT	.0059	UGG	
111TCE		3.0	LT	.0059	UGG	
112TCE		3.0	LT	.0028	UGG	
112TCE		3.0	LT	.0028	UGG	
12DCE		3.0	LT	.0061	UGG	
12DCE		3.0	LT	.0061	UGG	
12DCLE		3.0	LT	.0048	UGG	
12DCLE		3.0	LT	.0048	UGG	
12DCLP		3.0	LT	.0100	UGG	
12DCLP		3.0	LT	.0100	UGG	
OILGR	00	3.0	ND	5000.0000	UGG	R
OILGR		3.0	ND	5000.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0217	UGG	
			AS	JD11	7.8		53.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		23.2000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8	LT	9.3100	UGG	
			CU		.8		14.7000	UGG	
			FE		.8		15000.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		9.3600	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		62.0000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8	ND	.3300	UGG	R
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

4531

DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCBD	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCBO16	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDDD	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK527	7.8		.7070	UGG	
UNK528	7.8		1.0500	UGG	
UNK532	7.8		.4270	UGG	
UNK532	7.8		5.3200	UGG	D
UNK534	7.8		.3530	UGG	
UNK536	7.8		5.9100	UGG	
UNK537	7.8		.6490	UGG	D
UNK537	7.8		.6620	UGG	
UNK538	7.8		2.1000	UGG	
UNK538	7.8		2.8400	UGG	D
UNK543	7.8		3.6100	UGG	
UNK545	7.8		.6790	UGG	
UNK548	7.8		.8080	UGG	
UNK550	7.8		.6870	UGG	
UNK552	7.8		1.3000	UGG	
UNK553	7.8		2.2300	UGG	
UNK554	7.8		.3040	UGG	
UNK563	7.8		.2550	UGG	
UNK580	7.8		.3250	UGG	
UNK582	7.8		.2660	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
130CLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	

4551

2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8	ND	.3300	UGG	R
2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCLE	.8	LT	.0048	UGG	
12DCLP	.8	LT	.0100	UGG	

LM12

4SS1

01LGR

00

.8

580.0000 UGG

C-110

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0443	UGG	
			AS	JD11	7.8		74.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		96.0000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8		20.7000	UGG	
			CU		.8	LT	6.2900	UGG	
			FE		.8		12999.9999	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		18.2000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		290.0000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8	ND	.3300	UGG	R
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

4552

DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCBD	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDD	7.8	LT	.3900	UGG	
PPDE	7.8	LT	.4000	UGG	
PPDOT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK527	7.8		.6060	UGG	
UNK528	7.8		1.3700	UGG	
UNK532	7.8		6.2300	UGG	
UNK536	7.8		7.2100	UGG	
UNK537	7.8		.7640	UGG	
UNK537	7.8		.8430	UGG	D
UNK538	7.8		2.4500	UGG	
UNK538	7.8		3.3600	UGG	D
UNK543	7.8		1.5800	UGG	
UNK545	7.8		.7320	UGG	
UNK550	7.8		1.0600	UGG	
UNK551	7.8		2.2400	UGG	
UNK552	7.8		1.2300	UGG	
UNK553	7.8		1.4700	UGG	
UNK557	7.8		.6270	UGG	
UNK564	7.8		2.2400	UGG	
UNK584	7.8		2.2400	UGG	
UNK588	7.8		.6560	UGG	
UNK600	7.8		2.2400	UGG	
UNK630	7.8		2.3200	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	

4352

2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8		.4630	UGG	S
2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
24STCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8		.1230	UGG	S
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
UNK078	.8		.8650	UGG	
UNK186	.8		.0067	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	

LM12

4552

12DCLE		.8	LT	.0048	UGG
12DCLP		.8	LT	.0100	UGG
OILGR	00	.8		1070.0000	UGG

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0319	UGG	
			AS	JD11	7.8		36.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		39.7000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8	LT	9.3100	UGG	
			CU		.8		30.6000	UGG	
			FE		.8		17000.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		16.6000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		142.0000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8	ND	.3300	UGG	R
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

4553

DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCB0	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDD	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK526	7.8		.3770	UGG	
UNK528	7.8		1.2700	UGG	
UNK532	7.8		6.2700	UGG	D
UNK532	7.8		1.0000	UGG	
UNK534	7.8		.8050	UGG	
UNK536	7.8		8.3800	UGG	
UNK537	7.8		.6140	UGG	D
UNK537	7.8		.6490	UGG	
UNK538	7.8		2.1400	UGG	
UNK538	7.8		2.9200	UGG	D
UNK544	7.8		.0011	UGG	
UNK545	7.8		1.9400	UGG	
UNK548	7.8		1.1800	UGG	
UNK550	7.8		.6190	UGG	
UNK552	7.8		1.2400	UGG	
UNK553	7.8		3.0800	UGG	
UNK563	7.8		.2930	UGG	
UNK569	7.8		.2490	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	

4553

2MNAP	7.8		.4680	UGG	S
2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8		.2150	UGG	S
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCLE	.8	LT	.0048	UGG	
12DCLP	.8	LT	.0100	UGG	
OILGR	.8		3110.0000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0536	UGG	
			AS	JD11	7.8		59.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		34.8000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8	LT	9.3100	UGG	
			CU		.8		26.0000	UGG	
			FE		.8		10000.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		11.3000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		88.6000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8		1.0600	UGG	S
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

4554

DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCB0	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NN0PA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDDD	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK527	7.8		.5980	UGG	
UNK528	7.8		1.1500	UGG	
UNK532	7.8		5.2200	UGG	
UNK536	7.8		6.2600	UGG	
UNK537	7.8		.6680	UGG	D
UNK537	7.8		.6760	UGG	
UNK538	7.8		2.2300	UGG	
UNK538	7.8		2.8600	UGG	D
UNK543	7.8		1.6000	UGG	
UNK544	7.8		.6860	UGG	
UNK548	7.8		.3910	UGG	
UNK550	7.8		.3670	UGG	
UNK552	7.8		1.4700	UGG	
UNK553	7.8		1.2600	UGG	
UNK554	7.8		.2970	UGG	D
UNK554	7.8		.3420	UGG	
UNK582	7.8		.2580	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8		.8220	UGG	S

4554

2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCLE	.8	LT	.0048	UGG	
12DCLP	.8	LT	.0100	UGG	
OILGR	.8		498.0000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS5
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0744	UGG	
			AS	JD11	7.8		87.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8	LT	7.9800	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8		10.9000	UGG	
			CU		.8		31.4000	UGG	
			FE		.8		14000.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		13.5000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		106.0000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPI		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8		.4300	UGG	S
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

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4535

DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCB0	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCB016	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDD0	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK526	7.8		.4230	UGG	
UNK528	7.8		1.1800	UGG	
UNK530	7.8		.2180	UGG	
UNK532	7.8		5.4500	UGG	
UNK536	7.8		6.4800	UGG	
UNK537	7.8		.7070	UGG	D
UNK537	7.8		.7290	UGG	
UNK538	7.8		3.0800	UGG	D
UNK538	7.8		2.3200	UGG	
UNK543	7.8		1.0300	UGG	
UNK545	7.8		.5960	UGG	
UNK548	7.8		.2470	UGG	
UNK550	7.8		.5100	UGG	
UNK552	7.8		1.1400	UGG	
UNK553	7.8		.7390	UGG	
UNK554	7.8		.3240	UGG	D
UNK554	7.8		.3280	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8		1.0500	UGG	S

4SS5

2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DCBD	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCL	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCL	.8	LT	.0048	UGG	
12DCLP	.8	LT	.0100	UGG	
01LGR	.8		328.0000	UGG	

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 4SS6
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	HG	JB09	.8		.0209	UGG	
			AS	JD11	7.8		27.0000	UGG	
			SB		7.8	LT	.3730	UGG	
			AG	JS05	.8	LT	.6990	UGG	
			BA		.8		23.0000	UGG	
			BE		.8	LT	.3310	UGG	
			CD		.8	LT	.9510	UGG	
			CR		.8	LT	9.3100	UGG	
			CU		.8		18.0000	UGG	
			FE		.8		8200.0000	UGG	
			MN		.8	LT	292.0000	UGG	
			NI		.8		14.5000	UGG	
			PB		.8	LT	92.3000	UGG	
			SE		.8	LT	92.4000	UGG	
			TL		.8	LT	67.6000	UGG	
			ZN		.8		69.8000	UGG	
			ABHC	LM11	7.8	ND	.5000	UGG	R
			AENSLF		7.8	ND	.5000	UGG	R
			ALDRN		7.8	LT	.4200	UGG	
			ANAPNE		7.8	LT	.3400	UGG	
			ANAPYL		7.8	LT	.3100	UGG	
			ANTHRC		7.8	LT	.2900	UGG	R
			BAANTR		7.8	LT	.2700	UGG	
			BAPYR		7.8	LT	.1600	UGG	
			BBFANT		7.8	LT	.2500	UGG	
			BBHC		7.8	LT	.3300	UGG	
			BBZP		7.8	ND	.3300	UGG	R
			BENSLF		7.8	ND	1.0000	UGG	R
			BENZOA		7.8	ND	2.0000	UGG	R
			BGHIPY		7.8	LT	.5200	UGG	
			BKFANT		7.8	LT	.2200	UGG	
			BZALC		7.8	ND	.3300	UGG	R
			B2CEXM		7.8	ND	.3300	UGG	R
			B2CIPE		7.8	ND	.3300	UGG	R
			B2CLEE		7.8	LT	.3800	UGG	
			B2EHP		7.8	LT	.6500	UGG	
			CHRY		7.8	LT	.1900	UGG	
			CLDAN		7.8	LT	.8100	UGG	
			CL6BZ		7.8	LT	.3500	UGG	
			CL6CP		7.8	ND	.3300	UGG	R
			CL6ET		7.8	LT	.1400	UGG	
			DBAHA		7.8	LT	.5700	UGG	
			DBHC		7.8	LT	.5700	UGG	
			DBZFUR		7.8	ND	.3300	UGG	R
			DEP		7.8	ND	.3300	UGG	R
			DLDRN		7.8	LT	.8600	UGG	

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DMP	7.8	ND	.3300	UGG	R
DNBP	7.8	ND	.3300	UGG	R
DNOP	7.8	LT	.3500	UGG	
ENDRN	7.8	LT	.3800	UGG	
ENDRNK	7.8	ND	1.0000	UGG	R
ESFS04	7.8	ND	1.0000	UGG	R
FANT	7.8	LT	.2100	UGG	
FLRENE	7.8	ND	.3300	UGG	R
HCBD	7.8	LT	.2900	UGG	
HPCL	7.8	LT	.2700	UGG	
ICDPYR	7.8	LT	.4500	UGG	
ISOPHR	7.8	ND	.3300	UGG	R
LIN	7.8	LT	.3000	UGG	
MEXCLR	7.8	ND	5.0000	UGG	R
NAP	7.8	LT	.2800	UGG	
NB	7.8	ND	.3300	UGG	R
NNDNPA	7.8	LT	.1100	UGG	
NNDPA	7.8	ND	.3300	UGG	R
PCBO16	7.8	ND	5.0000	UGG	R
PCB221	7.8	ND	5.0000	UGG	R
PCB232	7.8	ND	5.0000	UGG	R
PCB242	7.8	ND	5.0000	UGG	R
PCB248	7.8	ND	5.0000	UGG	R
PCB254	7.8	ND	10.0000	UGG	R
PCB260	7.8	ND	10.0000	UGG	R
PCP	7.8	ND	2.0000	UGG	R
PHANTR	7.8	LT	1.6000	UGG	
PHENOL	7.8	ND	.3300	UGG	R
PPDDD	7.8	LT	.3900	UGG	
PPDDE	7.8	LT	.4000	UGG	
PPDDT	7.8	LT	.4800	UGG	
PYR	7.8	LT	.5300	UGG	
TXPHEN	7.8	ND	10.0000	UGG	R
UNK527	7.8		.2550	UGG	
UNK528	7.8		1.4200	UGG	
UNK532	7.8		1.1600	UGG	
UNK532	7.8		6.6000	UGG	D
UNK534	7.8		.9790	UGG	
UNK536	7.8		9.1000	UGG	
UNK537	7.8		.7170	UGG	
UNK537	7.8		.6220	UGG	D
UNK538	7.8		2.3000	UGG	
UNK538	7.8		3.1300	UGG	D
UNK544	7.8		7.0900	UGG	
UNK545	7.8		1.5100	UGG	
UNK548	7.8		1.1100	UGG	
UNK550	7.8		.4570	UGG	
UNK552	7.8		.2980	UGG	
UNK552	7.8		.4920	UGG	D
UNK553	7.8		4.1100	UGG	
12DCLB	7.8	LT	.3300	UGG	
124TCB	7.8	LT	.1700	UGG	
13DCLB	7.8	LT	.3000	UGG	
14DCLB	7.8	LT	.2900	UGG	
2CLP	7.8	ND	.3300	UGG	R
2CNAP	7.8	LT	.3200	UGG	
2MNAP	7.8	ND	.3300	UGG	R

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2MP	7.8	ND	.3300	UGG	R
2NANIL	7.8	ND	2.0000	UGG	R
2NP	7.8	ND	.3300	UGG	R
24DCLP	7.8	ND	.3300	UGG	R
24DMPN	7.8	ND	.3300	UGG	R
24DNP	7.8	ND	2.0000	UGG	R
24DNT	7.8	LT	.4600	UGG	
245TCP	7.8	ND	2.0000	UGG	R
246TCP	7.8	ND	.3300	UGG	R
26DNT	7.8	LT	.2000	UGG	
3NANIL	7.8	ND	2.0000	UGG	R
33DC8D	7.8	ND	.7000	UGG	R
4BRPPE	7.8	ND	.3300	UGG	R
4CANIL	7.8	ND	.2800	UGG	R
4CLPPE	7.8	ND	.3300	UGG	R
4CL3C	7.8	ND	.2900	UGG	R
4MP	7.8	ND	.3300	UGG	R
4NANIL	7.8	ND	2.0000	UGG	R
4NP	7.8	ND	2.0000	UGG	R
46DN2C	7.8	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	.8	LT	.0045	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	.8	ND	.0050	UGG	R
C13DCP	.8	LT	.0028	UGG	
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	.8	LT	.0028	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCLE	.8	LT	.0048	UGG	
12DCLP	.8	LT	.0100	UGG	
OILGR	.8		1010.0000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 5SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/15/88	ME	AS	JD11	4.4	LT	2.2200	UGG	
			SE		4.4	LT	1.9500	UGG	
			TL		4.4	LT	2.3200	UGG	
			AG	JS05	4.4	LT	.6990	UGG	
			BE		4.4	LT	.3310	UGG	
			CD		4.4	LT	.9510	UGG	
			CR		4.4	LT	9.3100	UGG	
			CU		4.4	LT	6.2900	UGG	
			NI		4.4		2.7900	UGG	
			PB		4.4	LT	92.3000	UGG	
			SB		4.4	ND	7.6000	UGG	R
			ZN		4.4	LT	8.3800	UGG	
			HG	SB10	4.5	LT	.1000	UGL	
			PB	SD11	4.5		2.6900	UGL	
			AG	SS06	4.4	LT	5.5600	UGL	
			AS		4.4	ND	.0470	UGL	R
			BA		4.4		4.5600	UGL	
			BE		4.4	LT	2.9200	UGL	
			CD		4.4	LT	4.0900	UGL	
			CR		4.4		5.0000	UGL	
			CU		4.4	LT	6.2000	UGL	
			FE		4.4	LT	55.1000	UGL	
			MN		4.4		12.4000	UGL	
			NI		4.4	LT	16.2000	UGL	
			PB		4.4	LT	45.1000	UGL	
			SB		4.4	LT	84.6000	UGL	
			SE		4.4	LT	98.6000	UGL	
			TL		4.4	LT	90.4000	UGL	
			ZN		4.4		38.4000	UGL	
			COND	00	4.4		57.9000	UMHC	
			PH		8.7		5.1400		
			HG	99	4.4		.0218	UGG	

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 5SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/15/88	ME	AS	JD11	4.4	LT	2.2200	UGG	
			SE		4.4	LT	1.9500	UGG	
			TL		4.4	LT	2.3200	UGG	
			AG	JS05	4.4	LT	.6990	UGG	
			BE		4.4	LT	.3310	UGG	
			CD		4.4	LT	.9510	UGG	
			CR		4.4	LT	9.3100	UGG	
			CU		4.4	LT	6.2900	UGG	
			NI		4.4		3.0500	UGG	
			PB		4.4	LT	92.3000	UGG	
			SB		4.4	ND	7.6000	UGG	R
			ZN		4.4		13.1000	UGG	
			HG	SB10	4.5	LT	.1000	UGL	
			PB	SD11	4.5		4.0900	UGL	
			AG	SS06	4.4	LT	5.5600	UGL	
			AS		4.4	ND	.0470	UGL	R
			BA		4.4		1.5500	UGL	
			BE		4.4	LT	2.9200	UGL	
			CD		4.4	LT	4.0900	UGL	
			CR		4.4		6.3000	UGL	
			CU		4.4	LT	6.2000	UGL	
			FE		4.4	LT	55.1000	UGL	
			MN		4.4		24.9000	UGL	
			NI		4.4	LT	16.2000	UGL	
			PB		4.4	LT	45.1000	UGL	
			SB		4.4	LT	84.6000	UGL	
			SE		4.4	LT	98.6000	UGL	
			TL		4.4	LT	90.4000	UGL	
			ZN		4.4		60.9000	UGL	
			COND	00	4.4		85.6000	UMHC	
			PH		6.5		4.9700		
			HG	99	4.4	LT	.0179	UGG	

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 6SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	ABHC	LM11	1.5	ND	.5000	UGG	R
			AENSLF		1.5	ND	.5000	UGG	R
			ALDRN		1.5	LT	.4200	UGG	
			ANAPNE		1.5	LT	.3400	UGG	
			ANAPYL		1.5	LT	.3100	UGG	
			ANTHRC		1.5	LT	.2900	UGG	
			BAANTR		1.5	LT	.2700	UGG	
			BAPYR		1.5	LT	.1600	UGG	
			BBFANT		1.5	LT	.2500	UGG	
			BBHC		1.5	LT	.3300	UGG	
			BBZP		1.5	ND	.3300	UGG	R
			BENSLF		1.5	ND	1.0000	UGG	R
			BENZOA		1.5	ND	2.0000	UGG	R
			BGHIPI		1.5	LT	.5200	UGG	
			BKFANT		1.5	LT	.2200	UGG	
			BZALC		1.5	ND	.3300	UGG	R
			B2CEXM		1.5	ND	.3300	UGG	R
			B2CIPE		1.5	ND	.3300	UGG	R
			B2CLEE		1.5	LT	.3800	UGG	
			B2EHP		1.5	LT	.6500	UGG	
			CHRY		1.5	LT	.1900	UGG	
			CLDAN		1.5	LT	.8100	UGG	
			CL6BZ		1.5	LT	.3500	UGG	
			CL6CP		1.5	ND	.3300	UGG	R
			CL6ET		1.5	LT	.1400	UGG	
			DBAHA		1.5	LT	.5700	UGG	
			DBHC		1.5	LT	.5700	UGG	
			DBZFUR		1.5		.7110	UGG	S
			DEP		1.5	ND	.3300	UGG	R
			DLDRN		1.5	LT	.8600	UGG	
			DMP		1.5	ND	.3300	UGG	R
			DNBP		1.5	ND	.3300	UGG	R
			DNOP		1.5	LT	.3500	UGG	
			ENDRN		1.5	LT	.3800	UGG	
			ENDRNK		1.5	ND	1.0000	UGG	R
			ESFSO4		1.5	ND	1.0000	UGG	R
			FANT		1.5	LT	.2100	UGG	
			FLRENE		1.5	ND	.3300	UGG	R
			HCBD		1.5	LT	.2900	UGG	
			HPCL		1.5	LT	.2700	UGG	
			ICDPYR		1.5	LT	.4500	UGG	
			ISOPHR		1.5	ND	.3300	UGG	R
			LIN		1.5	LT	.3000	UGG	
			MEXCLR		1.5	ND	5.0000	UGG	R
			NAP		1.5	LT	.2800	UGG	
			NB		1.5	ND	.3300	UGG	R

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NNDNPA	1.5	LT	.1100	UGG	
NNDPA	1.5	ND	.3300	UGG	R
PCB016	1.5	ND	5.0000	UGG	R
PCB221	1.5	ND	5.0000	UGG	R
PCB232	1.5	ND	5.0000	UGG	R
PCB242	1.5	ND	5.0000	UGG	R
PCB248	1.5	ND	5.0000	UGG	R
PCB254	1.5	ND	10.0000	UGG	R
PCB260	1.5	ND	10.0000	UGG	R
PCP	1.5	ND	2.0000	UGG	R
PHANTR	1.5	LT	1.6000	UGG	
PHENOL	1.5	ND	.3300	UGG	R
PPDD	1.5	LT	.3900	UGG	
PPDE	1.5	LT	.4000	UGG	
PPDDT	1.5	LT	.4800	UGG	
PYR	1.5	LT	.5300	UGG	
TXPHEN	1.5	ND	10.0000	UGG	R
UNK527	1.5		.2530	UGG	
UNK528	1.5		1.3600	UGG	
UNK530	1.5		.2470	UGG	
UNK532	1.5		6.3900	UGG	D
UNK532	1.5		.2950	UGG	
UNK535	1.5		.2450	UGG	
UNK536	1.5		8.2800	UGG	
UNK537	1.5		.9240	UGG	D
UNK537	1.5		.9420	UGG	
UNK538	1.5		2.9100	UGG	
UNK538	1.5		3.9500	UGG	D
UNK540	1.5		.2360	UGG	
UNK543	1.5		2.5800	UGG	
UNK545	1.5		.9730	UGG	
UNK548	1.5		.4000	UGG	
UNK550	1.5		.2990	UGG	
UNK552	1.5		1.0500	UGG	
UNK553	1.5		1.4700	UGG	
UNK563	1.5		.2400	UGG	
UNK622	1.5		.7030	UGG	
12DCLB	1.5	LT	.3300	UGG	
124TCB	1.5	LT	.1700	UGG	
13DCLB	1.5	LT	.3000	UGG	
14DCLB	1.5	LT	.2900	UGG	
2CLP	1.5	ND	.3300	UGG	R
2CNAP	1.5	LT	.3200	UGG	
2MNAP	1.5	ND	.3300	UGG	R
2MP	1.5	ND	.3300	UGG	R
2NANIL	1.5	ND	2.0000	UGG	R
2NP	1.5	ND	.3300	UGG	R
24DCLP	1.5	ND	.3300	UGG	R
24DMPN	1.5	ND	.3300	UGG	R
24DNP	1.5	ND	2.0000	UGG	R
24DNT	1.5	LT	.4600	UGG	
245TCP	1.5	ND	2.0000	UGG	R
246TCP	1.5	ND	.3300	UGG	R
26DNT	1.5	LT	.2000	UGG	
3NANIL	1.5	ND	2.0000	UGG	R
33DCBD	1.5	ND	.7000	UGG	R
4BRPPE	1.5	ND	.3300	UGG	R

6SS1

4CANIL	1.5	ND	.2800	UGG	R
4CLPPE	1.5	ND	.3300	UGG	R
4CL3C	1.5	ND	.2900	UGG	R
4MP	1.5	ND	.3300	UGG	R
4NANIL	1.5	ND	2.0000	UGG	R
4NP	1.5	ND	2.0000	UGG	R
46DN2C	1.5	ND	2.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 6SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	ABHC	LM11	2.0	ND	.5000	UGG	R
			AENSLF		2.0	ND	.5000	UGG	R
			ALDRN		2.0	LT	.4200	UGG	
			ANAPNE		2.0	LT	.3400	UGG	
			ANAPYL		2.0	LT	.3100	UGG	
			ANTHRC		2.0	LT	.2900	UGG	
			BAANTR		2.0	LT	.2700	UGG	
			BAPYR		2.0	LT	.1600	UGG	
			BBFANT		2.0	LT	.2500	UGG	
			BBHC		2.0	LT	.3300	UGG	
			BBZP		2.0	ND	.3300	UGG	R
			BENSLF		2.0	ND	1.0000	UGG	R
			BENZO		2.0	ND	2.0000	UGG	R
			BGHIPY		2.0	LT	.5200	UGG	
			BKFANT		2.0	LT	.2200	UGG	
			BZALC		2.0	ND	.3300	UGG	R
			B2CEXM		2.0	ND	.3300	UGG	R
			B2CIPE		2.0	ND	.3300	UGG	R
			B2CLEE		2.0	LT	.3800	UGG	
			B2EHP		2.0	LT	.6500	UGG	
			CHRY		2.0	LT	.1900	UGG	
			CLDAN		2.0	LT	.8100	UGG	
			CL6BZ		2.0	LT	.3500	UGG	
			CL6CP		2.0	ND	.3300	UGG	R
			CL6ET		2.0	LT	.1400	UGG	
			DBAHA		2.0	LT	.5700	UGG	
			DBHC		2.0	LT	.5700	UGG	
			DBZFUR		2.0	ND	.3300	UGG	R
			DEP		2.0	ND	.3300	UGG	R
			DLDRN		2.0	LT	.8600	UGG	
			DMP		2.0	ND	.3300	UGG	R
			DNBP		2.0	ND	.3300	UGG	R
			DNOP		2.0	LT	.3500	UGG	
			ENDRN		2.0	LT	.3800	UGG	
			ENDRNK		2.0	ND	1.0000	UGG	R
			ESFSO4		2.0	ND	1.0000	UGG	R
			FANT		2.0		.4630	UGG	
			FLRENE		2.0	ND	.3300	UGG	R
			HCB		2.0	LT	.2900	UGG	
			HPCL		2.0	LT	.2700	UGG	
			ICDPYR		2.0	LT	.4500	UGG	
			ISOPHR		2.0	ND	.3300	UGG	R
			LIN		2.0	LT	.3000	UGG	
			MEXCLR		2.0	ND	5.0000	UGG	R
			NAP		2.0	LT	.2800	UGG	
			NB		2.0	ND	.3300	UGG	R

6552

NNDNPA	2.0	LT	.1100	UGG	
NNDPA	2.0	ND	.3300	UGG	R
PCB016	2.0	ND	5.0000	UGG	R
PCB221	2.0	ND	5.0000	UGG	R
PCB232	2.0	ND	5.0000	UGG	R
PCB242	2.0	ND	5.0000	UGG	R
PCB248	2.0	ND	5.0000	UGG	R
PCB254	2.0	ND	10.0000	UGG	R
PCB260	2.0	ND	10.0000	UGG	R
PCP	2.0	ND	2.0000	UGG	R
PHANTR	2.0	LT	1.6000	UGG	
PHENOL	2.0	ND	.3300	UGG	R
PPDDD	2.0	LT	.3900	UGG	
PPDDE	2.0	LT	.4000	UGG	
PPDDT	2.0	LT	.4800	UGG	
PYR	2.0		.4120	UGG	
TXPHEN	2.0	ND	10.0000	UGG	R
UNK528	2.0		.9740	UGG	
UNK532	2.0		4.8500	UGG	
UNK536	2.0		6.2100	UGG	D
UNK537	2.0		.7110	UGG	
UNK537	2.0		.7290	UGG	
UNK538	2.0		2.2700	UGG	
UNK538	2.0		3.0500	UGG	D
UNK538	2.0		2.5700	UGG	
UNK543	2.0		.7600	UGG	
UNK545	2.0		.6180	UGG	
UNK548	2.0		.3030	UGG	
UNK550	2.0		1.3200	UGG	
UNK552	2.0		2.1900	UGG	
UNK553	2.0		.3380	UGG	
UNK554	2.0		.3240	UGG	D
UNK554	2.0		.2250	UGG	
UNK563	2.0		2.8700	UGG	
UNK620	2.0		2.4200	UGG	
UNK622	2.0		1.9600	UGG	
UNK624	2.0		1.2300	UGG	
UNK626	2.0		.3300	UGG	
12DCLB	2.0	LT	.1700	UGG	
124TCB	2.0	LT	.3000	UGG	
13DCLB	2.0	LT	.2900	UGG	
14DCLB	2.0	LT	.3300	UGG	R
2CLP	2.0	ND	.3200	UGG	
2CNAP	2.0	LT	.3300	UGG	R
2MNAP	2.0	ND	.3300	UGG	R
2MP	2.0	ND	.3300	UGG	R
2NANIL	2.0	ND	2.0000	UGG	R
2NP	2.0	ND	.3300	UGG	R
24DCLP	2.0	ND	.3300	UGG	R
24DMPN	2.0	ND	.3300	UGG	R
24DNP	2.0	ND	2.0000	UGG	R
24DNT	2.0	LT	.4600	UGG	
245TCP	2.0	ND	2.0000	UGG	R
246TCP	2.0	ND	.3300	UGG	R
26DNT	2.0	LT	.2000	UGG	
3NANIL	2.0	ND	2.0000	UGG	R
33DCBD	2.0	ND	.7000	UGG	R
4BRPPE	2.0	ND	.3300	UGG	R

6SS2

4CANIL	2.0	ND	.2800	UGG	R
4CLPPE	2.0	ND	.3300	UGG	R
4CL3C	2.0	ND	.2900	UGG	R
4MP	2.0	ND	.3300	UGG	R
4NANIL	2.0	ND	2.0000	UGG	R
4NP	2.0	ND	2.0000	UGG	R
46DN2C	2.0	ND	2.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 6SS3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	ABHC	LM11	1.2	ND	.5000	UGG	R
			AENSLF		1.2	ND	.5000	UGG	R
			ALDRN		1.2	LT	.4200	UGG	
			ANAPNE		1.2	LT	.3400	UGG	
			ANAPYL		1.2	LT	.3100	UGG	
			ANTHRC		1.2	LT	.2900	UGG	
			BAANTR		1.2	LT	.2700	UGG	
			BAPYR		1.2	LT	.1600	UGG	
			BBFANT		1.2	LT	.2500	UGG	
			BBHC		1.2	LT	.3300	UGG	
			BBZP		1.2	ND	.3300	UGG	R
			BENSLF		1.2	ND	1.0000	UGG	R
			BENZOA		1.2	ND	2.0000	UGG	R
			BGHIPY		1.2	LT	.5200	UGG	
			BKFANT		1.2	LT	.2200	UGG	
			BZALC		1.2	ND	.3300	UGG	R
			B2CEXM		1.2	ND	.3300	UGG	R
			B2CIPE		1.2	ND	.3300	UGG	R
			B2CLEE		1.2	LT	.3800	UGG	
			B2EHP		1.2	LT	.6500	UGG	
			CHRY		1.2	LT	.1900	UGG	
			CLDAN		1.2	LT	.8100	UGG	
			CL6BZ		1.2	LT	.3500	UGG	
			CL6CP		1.2	ND	.3300	UGG	R
			CL6ET		1.2	LT	.1400	UGG	
			DBAHA		1.2	LT	.5700	UGG	
			DBHC		1.2	LT	.5700	UGG	
			DBZFUR		1.2	ND	.3300	UGG	R
			DEP		1.2	ND	.3300	UGG	R
			DLDRN		1.2	LT	.8600	UGG	
			DMP		1.2	ND	.3300	UGG	R
			DNBP		1.2	ND	.3300	UGG	R
			DNOP		1.2	LT	.3500	UGG	
			ENDRN		1.2	LT	.3800	UGG	
			ENDRNK		1.2	ND	1.0000	UGG	R
			ESFSO4		1.2	ND	1.0000	UGG	R
			FANT		1.2	LT	.2100	UGG	
			FLRENE		1.2	ND	.3300	UGG	R
			HCBD		1.2	LT	.2900	UGG	
			HPCL		1.2	LT	.2700	UGG	
			ICDPYR		1.2	LT	.4500	UGG	
			ISOPHR		1.2	ND	.3300	UGG	R
			LIN		1.2	LT	.3000	UGG	
			MEXCLR		1.2	ND	5.0000	UGG	R
			NAP		1.2	LT	.2800	UGG	
			NB		1.2	ND	.3300	UGG	R

6553

NNDNPA	1.2	LT	.1100	UGG	
NNDPA	1.2	ND	.3300	UGG	R
PCB016	1.2	ND	5.0000	UGG	R
PCB221	1.2	ND	5.0000	UGG	R
PCB232	1.2	ND	5.0000	UGG	R
PCB242	1.2	ND	5.0000	UGG	R
PCB248	1.2	ND	5.0000	UGG	R
PCB254	1.2	ND	10.0000	UGG	R
PCB260	1.2	ND	10.0000	UGG	R
PCP	1.2	ND	2.0000	UGG	R
PHANTR	1.2	LT	1.6000	UGG	
PHENOL	1.2	ND	.3300	UGG	R
PPDD	1.2	LT	.3900	UGG	
PPDDE	1.2	LT	.4000	UGG	
PPDDT	1.2	LT	.4800	UGG	
PYR	1.2	LT	.5300	UGG	
TXPHEN	1.2	ND	10.0000	UGG	R
UNK527	1.2		.4360	UGG	
UNK528	1.2		1.1400	UGG	
UNK532	1.2		5.6500	UGG	
UNK535	1.2		.2150	UGG	
UNK536	1.2		8.9600	UGG	
UNK537	1.2		.9500	UGG	D
UNK537	1.2		.8610	UGG	
UNK538	1.2		2.6700	UGG	
UNK538	1.2		3.6900	UGG	D
UNK540	1.2		.2190	UGG	
UNK543	1.2		.3290	UGG	
UNK545	1.2		.6480	UGG	
UNK550	1.2		.3600	UGG	
UNK552	1.2		.2350	UGG	
UNK552	1.2		.4190	UGG	D
UNK620	1.2		.6740	UGG	
UNK622	1.2		.5470	UGG	
12DCLB	1.2	LT	.3300	UGG	
124TCB	1.2	LT	.1700	UGG	
13DCLB	1.2	LT	.3000	UGG	
14DCLB	1.2	LT	.2900	UGG	
2CLP	1.2	ND	.3300	UGG	R
2CNAP	1.2	LT	.3200	UGG	
2MNAP	1.2	ND	.3300	UGG	R
2MP	1.2	ND	.3300	UGG	R
2NANIL	1.2	ND	2.0000	UGG	R
2NP	1.2	ND	.3300	UGG	R
24DCLP	1.2	ND	.3300	UGG	R
24DMPN	1.2	ND	.3300	UGG	R
24DNP	1.2	ND	2.0000	UGG	R
24DNT	1.2	LT	.4600	UGG	
245TCP	1.2	ND	2.0000	UGG	R
246TCP	1.2	ND	.3300	UGG	R
26DNT	1.2	LT	.2000	UGG	
3NANIL	1.2	ND	2.0000	UGG	R
33DCBD	1.2	ND	.7000	UGG	R
4BRPPE	1.2	ND	.3300	UGG	R
4CANIL	1.2	ND	.2800	UGG	R
4CLPPE	1.2	ND	.3300	UGG	R
4CL3C	1.2	ND	.2900	UGG	R

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4MP	1.2	ND	.3300	UGG	R
4NANIL	1.2	ND	2.0000	UGG	R
4NP	1.2	ND	2.0000	UGG	R
46DN2C	1.2	ND	2.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 6SS4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/12/88	ME	ABHC	LM11	2.0	ND	.5000	UGG	R
			AENSLF		2.0	ND	.5000	UGG	R
			ALDRN		2.0	LT	.4200	UGG	
			ANAPNE		2.0	LT	.3400	UGG	
			ANAPYL		2.0	LT	.3100	UGG	
			ANTHRC		2.0	LT	.2900	UGG	
			BAANTR		2.0	LT	.2700	UGG	
			BAPYR		2.0	LT	.1600	UGG	
			BBFANT		2.0	LT	.2500	UGG	
			BBHC		2.0	LT	.3300	UGG	
			BBZP		2.0	ND	.3300	UGG	R
			BENSLF		2.0	ND	1.0000	UGG	R
			BENZO		2.0	ND	2.0000	UGG	R
			BGHIPY		2.0	LT	.5200	UGG	
			BKFANT		2.0	LT	.2200	UGG	
			BZALC		2.0	ND	.3300	UGG	R
			B2CEXM		2.0	ND	.3300	UGG	R
			B2CIPE		2.0	ND	.3300	UGG	R
			B2CLEE		2.0	LT	.3800	UGG	
			B2EHP		2.0	LT	.6500	UGG	
			CHRY		2.0	LT	.1900	UGG	
			CLDAN		2.0	LT	.8100	UGG	
			CL6BZ		2.0		.9030	UGG	
			CL6CP		2.0	ND	.3300	UGG	R
			CL6ET		2.0	LT	.1400	UGG	
			DBAHA		2.0	LT	.5700	UGG	
			DBHC		2.0	LT	.5700	UGG	
			DBZFUR		2.0	ND	.3300	UGG	R
			DEP		2.0	ND	.3300	UGG	R
			DLDRN		2.0	LT	.8600	UGG	
			DMP		2.0	ND	.3300	UGG	R
			DNBP		2.0	ND	.3300	UGG	R
			DNOP		2.0	LT	.3500	UGG	
			ENDRN		2.0	LT	.3800	UGG	
			ENDRNK		2.0	ND	1.0000	UGG	R
			ESFSO4		2.0	ND	1.0000	UGG	R
			FANT		2.0		.4680	UGG	
			FLRENE		2.0	ND	.3300	UGG	R
			HCB		2.0	LT	.2900	UGG	
			HPCL		2.0	LT	.2700	UGG	
			ICDPYR		2.0	LT	.4500	UGG	
			ISOPHR		2.0	ND	.3300	UGG	R
			LIN		2.0	LT	.3000	UGG	
			MEXCLR		2.0	ND	5.0000	UGG	R
			NAP		2.0	LT	.2800	UGG	
			NB		2.0	ND	.3300	UGG	R

6SS4

NNDNPA	2.0	LT	.1100	UGG	
NNDPA	2.0	ND	.3300	UGG	R
PCBO16	2.0	ND	5.0000	UGG	R
PCB221	2.0	ND	5.0000	UGG	R
PCB232	2.0	ND	5.0000	UGG	R
PCB242	2.0	ND	5.0000	UGG	R
PCB248	2.0	ND	5.0000	UGG	R
PCB254	2.0	ND	10.0000	UGG	R
PCB260	2.0	ND	10.0000	UGG	R
PCP	2.0	ND	2.0000	UGG	R
PHANTR	2.0	LT	1.6000	UGG	
PHENOL	2.0	ND	.3300	UGG	R
PPDDD	2.0	LT	.3900	UGG	
PPDDE	2.0	LT	.4000	UGG	
PPDDT	2.0	LT	.4800	UGG	
PYR	2.0	LT	.5300	UGG	
TXPHEN	2.0	ND	10.0000	UGG	R
UNK532	2.0		5.5600	UGG	
UNK536	2.0		8.6200	UGG	
UNK613	2.0		6.7500	UGG	
UNK614	2.0		7.2400	UGG	
UNK619	2.0		1.1100	UGG	D
UNK619	2.0		1.7400	UGG	
UNK620	2.0		1.5300	UGG	
UNK622	2.0		1.4200	UGG	
UNK622	2.0		1.3700	UGG	D
UNK623	2.0		1.2200	UGG	D
UNK623	2.0		1.2800	UGG	
UNK626	2.0		1.3100	UGG	D
UNK626	2.0		2.0800	UGG	
UNK628	2.0		2.0800	UGG	
UNK629	2.0		1.4600	UGG	
UNK629	2.0		1.0300	UGG	D
UNK634	2.0		2.3100	UGG	
UNK635	2.0		1.3700	UGG	
UNK636	2.0		1.4400	UGG	
UNK642	2.0		1.2400	UGG	
12DCLB	2.0	LT	.3300	UGG	
124TCB	2.0	LT	.1700	UGG	
13DCLB	2.0	LT	.3000	UGG	
14DCLB	2.0	LT	.2900	UGG	
2CLP	2.0	ND	.3300	UGG	R
2CNAP	2.0	LT	.3200	UGG	
2MNAP	2.0	ND	.3300	UGG	R
2MP	2.0	ND	.3300	UGG	R
2NANIL	2.0	ND	2.0000	UGG	R
2NP	2.0	ND	.3300	UGG	R
24DCLP	2.0	ND	.3300	UGG	R
24DMPN	2.0	ND	.3300	UGG	R
24DNP	2.0	ND	2.0000	UGG	R
24DNT	2.0	LT	.4600	UGG	
245TCP	2.0	ND	2.0000	UGG	R
246TCP	2.0	ND	.3300	UGG	R
26DNT	2.0	LT	.2000	UGG	
3NANIL	2.0	ND	2.0000	UGG	R
33DCBD	2.0	ND	.7000	UGG	R
4BRPPE	2.0	ND	.3300	UGG	R

6554

4CANIL	2.0	ND	.2800	UGG	R
4CLPPE	2.0	ND	.3300	UGG	R
4CL3C	2.0	ND	.2900	UGG	R
4MP	2.0	ND	.3300	UGG	R
4NANIL	2.0	ND	2.0000	UGG	R
4NP	2.0	ND	2.0000	UGG	R
46DN2C	2.0	ND	2.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 7SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOUL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	AS	JD11	4.0	LT	2.2200	UGG	
			AS		7.8	LT	2.2200	UGG	
			SE		7.8	LT	1.9500	UGG	
			SE		4.0	LT	1.9500	UGG	
			TL		7.8	LT	2.3200	UGG	
			TL		4.0	LT	2.3200	UGG	
			AG	JS05	4.0	LT	.6990	UGG	
			AG		7.8	LT	.6990	UGG	
			BE		7.8	LT	.3310	UGG	
			BE		4.0	LT	.3310	UGG	
			CD		7.8	LT	.9510	UGG	
			CD		4.0	LT	.9510	UGG	
			CR		7.8	LT	9.3100	UGG	
			CR		4.0	LT	9.3100	UGG	
			CU		7.8		35.2000	UGG	
			CU		4.0		16.3000	UGG	
			NI		7.8		7.2400	UGG	
			NI		4.0		3.4900	UGG	
			PB		4.0	LT	92.3000	UGG	
			PB		7.8	LT	92.3000	UGG	
			SB		7.8	ND	7.6000	UGG	R
			SB		4.0	ND	7.6000	UGG	R
			SE		4.0	LT	92.4000	UGG	
			ZN		4.0		15.2000	UGG	
			ZN		7.8		40.5000	UGG	
			ABHC	LM11	.8	ND	.5000	UGG	R
			ABHC		4.0	ND	.5000	UGG	R
			AENSLF		.8	ND	.5000	UGG	R
			AENSLF		4.0	ND	.5000	UGG	R
			ALDRN		.8	LT	.4200	UGG	
			ALDRN		4.0	LT	.4200	UGG	
			ANAPNE		.8	LT	.3400	UGG	
			ANAPNE		4.0	LT	.3400	UGG	
			ANAPYL		.8	LT	.3100	UGG	
			ANAPYL		4.0	LT	.3100	UGG	
			ANTHRC		.8	LT	.2900	UGG	
			ANTHRC		4.0	LT	.2900	UGG	
			BAANTR		.8		1.2300	UGG	
			BAANTR		4.0		23.8000	UGG	
			BAPYR		.8		1.1500	UGG	
			BAPYR		4.0		21.4000	UGG	
			BBFANT		.8		1.1100	UGG	
			BBFANT		4.0		23.3000	UGG	
			BBHC		.8	LT	.3300	UGG	
			BBHC		4.0	LT	.3300	UGG	
			BBZP		.8	ND	.3300	UGG	R

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BBZP	4.0	ND	.3300	UGG	R
BENSLF	.8	ND	1.0000	UGG	R
BENSLF	4.0	ND	1.0000	UGG	R
BENZOA	.8	ND	2.0000	UGG	R
BENZOA	4.0	ND	2.0000	UGG	R
BGHIPI	.8	LT	.5200	UGG	
BGHIPI	4.0	LT	.5200	UGG	
BKFANT	.8	LT	.2200	UGG	
BKFANT	4.0	LT	.2200	UGG	
BZALC	.8	ND	.3300	UGG	R
BZALC	4.0	ND	.3300	UGG	R
B2CEXM	.8	ND	.3300	UGG	R
B2CEXM	4.0	ND	.3300	UGG	R
B2CIPE	.8	ND	.3300	UGG	R
B2CIPE	4.0	ND	.3300	UGG	R
B2CLEE	.8	LT	.3800	UGG	
B2CLEE	4.0	LT	.3800	UGG	
B2EHP	.8	LT	.6500	UGG	
B2EHP	4.0	LT	.6500	UGG	
CHRY	.8		1.3300	UGG	
CHRY	4.0		24.3000	UGG	
CLDAN	.8	LT	.8100	UGG	
CLDAN	4.0	LT	.8100	UGG	
CL6BZ	.8	LT	.3500	UGG	
CL6BZ	4.0	LT	.3500	UGG	
CL6CP	.8	ND	.3300	UGG	R
CL6CP	4.0	ND	.3300	UGG	R
CL6ET	.8	LT	.1400	UGG	
CL6ET	4.0	LT	.1400	UGG	
DBAHA	.8	LT	.5700	UGG	
DBAHA	4.0	LT	.5700	UGG	
DBHC	.8	LT	.5700	UGG	
DBHC	4.0	LT	.5700	UGG	
DBZFUR	.8	ND	.3300	UGG	R
DBZFUR	4.0		5.9500	UGG	S
DEP	.8	ND	.3300	UGG	R
DEP	4.0	ND	.3300	UGG	R
DLDRN	.8	LT	.8600	UGG	
DLDRN	4.0	LT	.8600	UGG	
DMP	.8	ND	.3300	UGG	R
DMP	4.0	ND	.3300	UGG	R
DNBP	.8	ND	.3300	UGG	R
DNBP	4.0	ND	.3300	UGG	R
DNOP	.8	LT	.3500	UGG	
DNOP	4.0	LT	.3500	UGG	
ENDRN	.8	LT	.3800	UGG	
ENDRN	4.0	LT	.3800	UGG	
ENDRNK	.8	ND	1.0000	UGG	R
ENDRNK	4.0	ND	1.0000	UGG	R
ESFSO4	.8	ND	1.0000	UGG	R
ESFSO4	4.0	ND	1.0000	UGG	R
FANT	.8		1.3600	UGG	
FANT	4.0		55.8000	UGG	
FLRENE	.8	ND	.3300	UGG	R
FLRENE	4.0		7.9600	UGG	S
HCBD	.8	LT	.2900	UGG	
HCBD	4.0	LT	.2900	UGG	

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HPCL	.8	LT	.2700	UGG	
HPCL	4.0	LT	.2700	UGG	
HPCLE	.8	LT	.7400	UGG	
HPCLE	4.0	LT	.7400	UGG	
ICDPYR	.8	LT	.4500	UGG	
ICDPYR	4.0		12.1000	UGG	
ISOPHR	.8	ND	.3300	UGG	R
ISOPHR	4.0	ND	.3300	UGG	R
LIN	.8	LT	.3000	UGG	
LIN	4.0	LT	.3000	UGG	
MEXCLR	.8	ND	5.0000	UGG	R
MEXCLR	4.0	ND	5.0000	UGG	R
NAP	.8	LT	.2800	UGG	
NAP	4.0	LT	.2800	UGG	
NB	.8	ND	.3300	UGG	R
NB	4.0	ND	.3300	UGG	R
NNDNPA	.8	LT	.1100	UGG	
NNDNPA	4.0	LT	.1100	UGG	
NNDPA	.8	ND	.3300	UGG	R
NNDPA	4.0	ND	.3300	UGG	R
PCB016	.8	ND	5.0000	UGG	R
PCB016	4.0	ND	5.0000	UGG	R
PCB221	.8	ND	5.0000	UGG	R
PCB221	4.0	ND	5.0000	UGG	R
PCB232	.8	ND	5.0000	UGG	R
PCB232	4.0	ND	5.0000	UGG	R
PCB242	.8	ND	5.0000	UGG	R
PCB242	4.0	ND	5.0000	UGG	R
PCB248	.8	ND	5.0000	UGG	R
PCB248	4.0	ND	5.0000	UGG	R
PCB254	.8	ND	10.0000	UGG	R
PCB254	4.0	ND	10.0000	UGG	R
PCB260	.8	ND	10.0000	UGG	R
PCB260	4.0	ND	10.0000	UGG	R
PCP	.8	ND	2.0000	UGG	R
PCP	4.0	ND	2.0000	UGG	R
PHANTR	.8	LT	1.6000	UGG	
PHANTR	4.0	LT	1.6000	UGG	
PHENOL	.8		.8080	UGG	S
PHENOL	4.0	ND	.3300	UGG	R
PPDDD	.8	LT	.3900	UGG	
PPDDD	4.0	LT	.3900	UGG	
PPDDE	.8	LT	.4000	UGG	
PPDDE	4.0	LT	.4000	UGG	
PPDDT	.8	LT	.4800	UGG	
PPDDT	4.0	LT	.4800	UGG	
PYR	.8		1.2900	UGG	
PYR	4.0		22.7000	UGG	
TXPHEN	.8	ND	10.0000	UGG	R
TXPHEN	4.0	ND	10.0000	UGG	R
UNK535	.8		7.7200	UGG	
UNK535	4.0		1.9000	UGG	
UNK537	.8		22.8000	UGG	
UNK538	.8		.2720	UGG	
UNK538	4.0		28.7000	UGG	
UNK539	.8		.4320	UGG	D
UNK539	.8		.3460	UGG	

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UNK539	4.0		.5840	UGG	
UNK543	.8		.5470	UGG	
UNK543	4.0		.9140	UGG	
UNK544	.8		.4140	UGG	
UNK544	4.0		1.6600	UGG	
UNK546	.8		.4360	UGG	
UNK546	4.0		.8570	UGG	
UNK549	.8		.4830	UGG	
UNK553	.8		.3330	UGG	
UNK554	.8		1.9600	UGG	
UNK574	4.0		1.1600	UGG	
UNK591	4.0		.8730	UGG	
UNK591	4.0		.8520	UGG	D
UNK592	4.0		.3030	UGG	
UNK593	.8		2.2200	UGG	
UNK596	.8		.2520	UGG	
UNK597	.8		.2620	UGG	
UNK598	.8		1.1100	UGG	
UNK600	4.0		.3670	UGG	
UNK601	.8		.3540	UGG	
UNK602	4.0		.4210	UGG	
UNK606	4.0		.2300	UGG	
UNK607	4.0		.4710	UGG	
UNK609	.8		.2590	UGG	
UNK612	.8		.2960	UGG	
UNK619	4.0		.9620	UGG	
UNK620	4.0		1.1300	UGG	
UNK649	4.0		1.1700	UGG	
UNK655	4.0		.8520	UGG	
12DCLB	.8	LT	.3300	UGG	
12DCLB	4.0	LT	.3300	UGG	
124TCB	.8	LT	.1700	UGG	
124TCB	4.0	LT	.1700	UGG	
13DCLB	.8	LT	.3000	UGG	
13DCLB	4.0	LT	.3000	UGG	
14DCLB	.8	LT	.2900	UGG	
14DCLB	4.0	LT	.2900	UGG	
2CLP	.8	ND	.3300	UGG	R
2CLP	4.0	ND	.3300	UGG	R
2CNAP	.8	LT	.3200	UGG	
2CNAP	4.0	LT	.3200	UGG	
2MNAP	.8	ND	.3300	UGG	R
2MNAP	4.0		3.0400	UGG	S
2MP	.8	ND	.3300	UGG	R
2MP	4.0	ND	.3300	UGG	R
2NANIL	.8	ND	2.0000	UGG	R
2NANIL	4.0	ND	2.0000	UGG	R
2NP	.8	ND	.3300	UGG	R
2NP	4.0	ND	.3300	UGG	R
24DCLP	.8	ND	.3300	UGG	R
24DCLP	4.0	ND	.3300	UGG	R
24DMPN	.8	ND	.3300	UGG	R
24DMPN	4.0	ND	.3300	UGG	R
24DNP	.8	ND	2.0000	UGG	R
24DNP	4.0	ND	2.0000	UGG	R
24DNT	.8	LT	.4600	UGG	
24DNT	4.0	LT	.4600	UGG	

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245TCP	.8	ND	2.0000	UGG	R
245TCP	4.0	ND	2.0000	UGG	R
246TCP	.8	ND	.3300	UGG	R
246TCP	4.0	ND	.3300	UGG	R
26DNT	.8	LT	.2000	UGG	
26DNT	4.0	LT	.2000	UGG	
3NANIL	.8	ND	2.0000	UGG	R
3NANIL	4.0	ND	2.0000	UGG	R
33DCBD	.8	ND	.7000	UGG	R
33DCBD	4.0	ND	.7000	UGG	R
4BRPPE	.8	ND	.3300	UGG	R
4BRPPE	4.0	ND	.3300	UGG	R
4CANIL	.8	ND	.2800	UGG	R
4CANIL	4.0	ND	.2800	UGG	R
4CLPPE	.8	ND	.3300	UGG	R
4CLPPE	4.0	ND	.3300	UGG	R
4CL3C	.8	ND	.2900	UGG	R
4CL3C	4.0	ND	.2900	UGG	R
4MP	.8	ND	.3300	UGG	R
4MP	4.0	ND	.3300	UGG	R
4NANIL	.8	ND	2.0000	UGG	R
4NANIL	4.0	ND	2.0000	UGG	R
4NP	.8	ND	2.0000	UGG	R
4NP	4.0	ND	2.0000	UGG	R
46DN2C	.8	ND	2.0000	UGG	R
46DN2C	4.0	ND	2.0000	UGG	R
ACET	.8	ND	.0100	UGG	R
ACET	4.0	ND	.0100	UGG	R
BDRCLM	.8	ND	.0050	UGG	R
BDRCLM	4.0	ND	.0050	UGG	R
CCL4	4.0	LT	.0020	UGG	
CCL4	.8	LT	.0020	UGG	
CHBR3	.8	LT	.0039	UGG	
CHBR3	4.0	LT	.0039	UGG	
CHCL3	.8	LT	.0150	UGG	
CHCL3	4.0	LT	.0150	UGG	
CH2CL2	4.0	ND	.0500	UGG	R
CH2CL2	.8	ND	.0500	UGG	R
CH3BR	4.0	ND	.0100	UGG	R
CH3BR	.8	ND	.0100	UGG	R
CH3CL	4.0	LT	.0045	UGG	
CH3CL	.8	LT	.0045	UGG	
CLC6H5	4.0	LT	.0020	UGG	
CLC6H5	.8	LT	.0020	UGG	
CS2	4.0	ND	.0050	UGG	R
CS2	.8	ND	.0050	UGG	R
C13DCP	4.0	LT	.0028	UGG	
C13DCP	.8	LT	.0028	UGG	
C2AVE	4.0	ND	.0100	UGG	R
C2AVE	.8	ND	.0100	UGG	R
C2H3CL	4.0	LT	.0078	UGG	
C2H3CL	.8	LT	.0078	UGG	
C2H5CL	.8	LT	.0100	UGG	
C2H5CL	4.0	LT	.0100	UGG	
C6H6	4.0	LT	.0048	UGG	
C6H6	.8	LT	.0048	UGG	
DBRCLM	.8	LT	.0023	UGG	

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DBRCLM	4.0	LT	.0023	UGG	
ETC6H5	.8	LT	.0100	UGG	
ETC6H5	4.0	LT	.0100	UGG	
MEC6H5	.8	LT	.0062	UGG	
MEC6H5	4.0	LT	.0062	UGG	
MEK	.8	ND	.0100	UGG	R
MEK	4.0	ND	.0100	UGG	R
MIBK	4.0	ND	.0100	UGG	R
MIBK	.8	ND	.0100	UGG	R
MNBK	.8	ND	.0100	UGG	R
MNBK	4.0	ND	.0100	UGG	R
STYR	4.0	ND	.0050	UGG	R
STYR	.8	ND	.0050	UGG	R
TCLEA	4.0	LT	.0028	UGG	
TCLEA	.8	LT	.0028	UGG	
TCLEE	4.0		.0086	UGG	
TCLEE	.8	LT	.0079	UGG	
TRCLE	4.0	LT	.0020	UGG	
TRCLE	.8	LT	.0020	UGG	
T13DCP	4.0	LT	.0020	UGG	
T13DCP	.8	LT	.0020	UGG	
XYLEN	.8	ND	.0050	UGG	R
XYLEN	4.0	ND	.0050	UGG	R
11DCE	.8	LT	.0120	UGG	
11DCE	4.0	LT	.0120	UGG	
11DCLE	.8	LT	.0073	UGG	
11DCLE	4.0	LT	.0073	UGG	
111TCE	.8	LT	.0059	UGG	
111TCE	4.0	LT	.0059	UGG	
112TCE	.8	LT	.0028	UGG	
112TCE	4.0	LT	.0028	UGG	
12DCE	.8	LT	.0061	UGG	
12DCE	4.0	LT	.0061	UGG	
12DCLE	4.0	LT	.0048	UGG	
12DCLE	.8	LT	.0048	UGG	
12DCLP	4.0	LT	.0100	UGG	
12DCLP	.8	LT	.0100	UGG	
HG	SB10	.8	LT	.1000	UGL
HG		4.0	LT	.1000	UGL
PB	SD11	.8		3.6500	UGL
PB		4.0		3.9400	UGL
AG	SS06	4.0	LT	5.5600	UGL
AG		7.8	LT	5.5600	UGL
AS		7.8	ND	.0470	UGL
AS		4.0	ND	.0470	UGL
BA		7.8		27.1000	UGL
BA		4.0		35.4000	UGL
BE		4.0	LT	2.9200	UGL
BE		7.8	LT	2.9200	UGL
CD		7.8	LT	4.0900	UGL
CD		4.0	LT	4.0900	UGL
CR		7.8	LT	4.4400	UGL
CR		4.0		5.2000	UGL
CU		4.0		11.4000	UGL
CU		7.8		19.9000	UGL
FE		7.8	LT	55.1000	UGL
FE		4.0	LT	55.1000	UGL

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MN		7.8		208.0000	UGL	
MN		4.0		80.5000	UGL	
NI		7.8	LT	16.2000	UGL	
NI		4.0	LT	16.2000	UGL	
PB		4.0	LT	45.1000	UGL	
PB		7.8	LT	45.1000	UGL	
SB		4.0	LT	84.6000	UGL	
SB		7.8	LT	84.6000	UGL	
SE		4.0	LT	98.6000	UGL	
SE		7.8	LT	98.6000	UGL	
TL		4.0	LT	90.4000	UGL	
TL		7.8	LT	90.4000	UGL	
ZN		7.8		106.0000	UGL	
ZN		4.0		54.7000	UGL	
OILGR	00	.8	ND	5000.0000	UGG	R
OILGR		4.0	ND	5000.0000	UGG	R
HG	99	7.8		.0624	UGG	
HG		4.0		.0396	UGG	

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 7SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	ACET	LM12	4.0	ND	.0100	UGG	R
			ACET		.6	ND	.0100	UGG	R
			BDRCLM		.6	ND	.0050	UGG	R
			BDRCLM		4.0	ND	.0050	UGG	R
			CCL4		.6	LT	.0020	UGG	
			CCL4		4.0	LT	.0020	UGG	
			CHBR3		4.0	LT	.0039	UGG	
			CHBR3		.6	LT	.0039	UGG	
			CHCL3		4.0	LT	.0150	UGG	
			CHCL3		.6	LT	.0150	UGG	
			CH2CL2		4.0	ND	.0500	UGG	R
			CH2CL2		.6	ND	.0500	UGG	R
			CH3BR		4.0	ND	.0100	UGG	R
			CH3BR		.6	ND	.0100	UGG	R
			CH3CL		.6	LT	.0045	UGG	
			CH3CL		4.0	LT	.0045	UGG	
			CLC6H5		.6	LT	.0020	UGG	
			CLC6H5		4.0	LT	.0020	UGG	
			CS2		.6	ND	.0050	UGG	R
			CS2		4.0	ND	.0050	UGG	R
			C13DCP		.6	LT	.0028	UGG	
			C13DCP		4.0	LT	.0028	UGG	
			C2AVE		.6	ND	.0100	UGG	R
			C2AVE		4.0	ND	.0100	UGG	R
			C2H3CL		4.0	LT	.0078	UGG	
			C2H3CL		.6	LT	.0078	UGG	
			C2H5CL		.6	LT	.0100	UGG	
			C2H5CL		4.0	LT	.0100	UGG	
			C6H6		.6	LT	.0048	UGG	
			C6H6		4.0	LT	.0048	UGG	
			DBRCLM		.6	LT	.0023	UGG	
			DBRCLM		4.0	LT	.0023	UGG	
			ETC6H5		4.0	LT	.0100	UGG	
			ETC6H5		.6	LT	.0100	UGG	
			MEC6H5		4.0	LT	.0062	UGG	
			MEC6H5		.6	LT	.0062	UGG	
			MEK		4.0	ND	.0100	UGG	R
			MEK		.6	ND	.0100	UGG	R
			MIBK		4.0	ND	.0100	UGG	R
			MIBK		.6	ND	.0100	UGG	R
			MNBK		.6	ND	.0100	UGG	R
			MNBK		4.0	ND	.0100	UGG	R
			STYR		4.0	ND	.0050	UGG	R
			STYR		.6	ND	.0050	UGG	R
			TCLEA		4.0	LT	.0028	UGG	
			TCLEA		.6	LT	.0028	UGG	

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TCLEE	4.0	LT	.0079	UGG	
TCLEE	.6	LT	.0079	UGG	
TRCLE	.6	LT	.0020	UGG	
TRCLE	4.0	LT	.0020	UGG	
T13DCP	4.0	LT	.0020	UGG	
T13DCP	.6	LT	.0020	UGG	
XYLEN	4.0	ND	.0050	UGG	R
XYLEN	.6	ND	.0050	UGG	R
11DCE	4.0	LT	.0120	UGG	
11DCE	.6	LT	.0120	UGG	
11DCLE	4.0	LT	.0073	UGG	
11DCLE	.6	LT	.0073	UGG	
111TCE	4.0	LT	.0059	UGG	
111TCE	.6	LT	.0059	UGG	
112TCE	4.0	LT	.0028	UGG	
112TCE	.6	LT	.0028	UGG	
12DCE	.6	LT	.0061	UGG	
12DCE	4.0	LT	.0061	UGG	
12DCLE	4.0	LT	.0048	UGG	
12DCLE	.6	LT	.0048	UGG	
12DCLP	4.0	LT	.0100	UGG	
12DCLP	.6	LT	.0100	UGG	
OILGR	00	ND	5000.0000	UGG	R
OILGR	4.0	ND	5000.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 7SS3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/16/88	ME	ACET	LM12	5.0	ND	.0100	UGG	R
			BDRCLM		5.0	ND	.0050	UGG	R
			CCL4		5.0	LT	.0020	UGG	
			CHBR3		5.0	LT	.0039	UGG	
			CHCL3		5.0	LT	.0150	UGG	
			CH2CL2		5.0	ND	.0500	UGG	R
			CH3BR		5.0	ND	.0100	UGG	R
			CH3CL		5.0	LT	.0045	UGG	
			CLC6H5		5.0	LT	.0020	UGG	
			CS2		5.0	ND	.0050	UGG	R
			C13DCP		5.0	LT	.0028	UGG	
			C2AVE		5.0	ND	.0100	UGG	R
			C2H3CL		5.0	LT	.0078	UGG	
			C2H5CL		5.0	LT	.0100	UGG	
			C6H6		5.0	LT	.0048	UGG	
			DBRCLM		5.0	LT	.0023	UGG	
			ETC6H5		5.0	LT	.0100	UGG	
			MEC6H5		5.0	LT	.0062	UGG	
			MEK		5.0	ND	.0100	UGG	R
			MIBK		5.0	ND	.0100	UGG	R
			MNBK		5.0	ND	.0100	UGG	R
			STYR		5.0	ND	.0050	UGG	R
			TCLEA		5.0	LT	.0028	UGG	
			TCLEE		5.0	LT	.0079	UGG	
			TRCLE		5.0	LT	.0020	UGG	
			T13DCP		5.0	LT	.0020	UGG	
			XYLEN		5.0	ND	.0050	UGG	R
			11DCE		5.0	LT	.0120	UGG	
			11DCLE		5.0	LT	.0073	UGG	
			111TCE		5.0	LT	.0059	UGG	
			112TCE		5.0	LT	.0028	UGG	
			12DCE		5.0	LT	.0061	UGG	
			12DCLE		5.0	LT	.0048	UGG	
			12DCLP		5.0	LT	.0100	UGG	
			OILGR	00	5.0	ND	5000.0000	UGG	R

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSD ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 8SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	HG	JB09	.0		.0237	UGG	
			AS	JD11	.0		20.4000	UGG	
			SB		.0	LT	.3730	UGG	
			AG	JS05	.0	LT	.6990	UGG	
			BA		.0		32.7000	UGG	
			BE		.0	LT	.3310	UGG	
			CD		.0	LT	.9510	UGG	
			CR		.0	LT	9.3100	UGG	
			CU		.0		22.9000	UGG	
			FE		.0		4399.9999	UGG	
			MN		.0	LT	292.0000	UGG	
			NI		.0		6.0900	UGG	
			PB		.0	LT	92.3000	UGG	
			SE		.0	LT	92.4000	UGG	
			TL		.0	LT	67.6000	UGG	
			ZN		.0		420.0000	UGG	
			ABHC	LM11	.0	ND	.5000	UGG	R
			AENSLF		.0	ND	.5000	UGG	R
			ALDRN		.0	LT	.4200	UGG	
			ANAPNE		.0	LT	.3400	UGG	
			ANAPYL		.0	LT	.3100	UGG	
			ANTHRC		.0	LT	.2900	UGG	
			BAANTR		.0	LT	.2700	UGG	
			BAPYR		.0	LT	.1600	UGG	
			BBFANT		.0	LT	.2500	UGG	
			BBHC		.0	LT	.3300	UGG	
			BBZP		.0	ND	.3300	UGG	R
			BENSLF		.0	ND	1.0000	UGG	R
			BENZOA		.0	ND	2.0000	UGG	R
			BGHIPI		.0	LT	.5200	UGG	
			BKFANT		.0	LT	.2200	UGG	
			BZALC		.0	ND	.3300	UGG	R
			B2CEXM		.0	ND	.3300	UGG	R
			B2CIPE		.0	ND	.3300	UGG	R
			B2CLEE		.0	LT	.3800	UGG	
			B2EHP		.0	LT	.6500	UGG	
			CHRY		.0	LT	.1900	UGG	
			CLDAN		.0	LT	.8100	UGG	
			CL6BZ		.0	LT	.3500	UGG	
			CL6CP		.0	ND	.3300	UGG	R
			CL6ET		.0	LT	.1400	UGG	
			C12		.0		.9020	UGG	S
			C13		.0		1.2100	UGG	S
			C16		.0		15.8000	UGG	S
			C17		.0		17.4000	UGG	S
			DBAHA		.0	LT	.5700	UGG	

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DBHC	.0	LT	.5700	UGG	
DBZFUR	.0	ND	.3300	UGG	R
DEP	.0	ND	.3300	UGG	R
DLDRN	.0	LT	.8600	UGG	
DMP	.0	ND	.3300	UGG	R
DNBP	.0	ND	.3300	UGG	R
DNOP	.0	LT	.3500	UGG	
ENDRN	.0	LT	.3800	UGG	
ENDRNK	.0	ND	1.0000	UGG	R
ESFS04	.0	ND	1.0000	UGG	R
FANT	.0		.3280	UGG	
FLRENE	.0	ND	.3300	UGG	R
HCB0	.0	LT	.2900	UGG	
HPCL	.0	LT	.2700	UGG	
ICDPYR	.0	LT	.4500	UGG	
ISOPHR	.0	ND	.3300	UGG	R
LIN	.0	LT	.3000	UGG	
MEXCLR	.0	ND	5.0000	UGG	R
NAP	.0	LT	.2800	UGG	
NB	.0	ND	.3300	UGG	R
NNDNPA	.0	LT	.1100	UGG	
NNDPA	.0	ND	.3300	UGG	R
PCB016	.0	ND	5.0000	UGG	R
PCB221	.0	ND	5.0000	UGG	R
PCB232	.0	ND	5.0000	UGG	R
PCB242	.0	ND	5.0000	UGG	R
PCB248	.0	ND	5.0000	UGG	R
PCB254	.0	ND	10.0000	UGG	R
PCB260	.0	ND	10.0000	UGG	R
PCP	.0	ND	2.0000	UGG	R
PHANTR	.0	LT	1.6000	UGG	
PHENOL	.0	ND	.3300	UGG	R
PPDD	.0	LT	.3900	UGG	
PPDE	.0	LT	.4000	UGG	
PPDDT	.0	LT	.4800	UGG	
PYR	.0	LT	.5300	UGG	
TXPHEN	.0	ND	10.0000	UGG	R
UNK532	.0		8.2300	UGG	
UNK536	.0		10.6000	UGG	
UNK538	.0		4.0600	UGG	D
UNK538	.0		2.9300	UGG	
UNK568	.0		1.6600	UGG	
UNK575	.0		10.5000	UGG	
UNK576	.0		158.0000	UGG	
UNK577	.0		8.3300	UGG	
UNK580	.0		9.3000	UGG	D
UNK580	.0		17.9000	UGG	
UNK590	.0		17.2000	UGG	
UNK593	.0		24.7000	UGG	
UNK597	.0		11.9000	UGG	
UNK598	.0		17.3000	UGG	
UNK602	.0		10.2000	UGG	
UNK606	.0		10.6000	UGG	
12DCLB	.0	LT	.3300	UGG	
124TCB	.0	LT	.1700	UGG	
13DCLB	.0	LT	.3000	UGG	
14DCLB	.0	LT	.2900	UGG	

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2CLP	.0	ND	.3300	UGG	R
2CNAP	.0	LT	.3200	UGG	
2MNAP	.0	ND	.3300	UGG	R
2MP	.0	ND	.3300	UGG	R
2NANIL	.0	ND	2.0000	UGG	R
2NP	.0	ND	.3300	UGG	R
24DCLP	.0	ND	.3300	UGG	R
24DMPN	.0	ND	.3300	UGG	R
24DNP	.0	ND	2.0000	UGG	R
24DNT	.0	LT	.4600	UGG	
245TCP	.0	ND	2.0000	UGG	R
246TCP	.0	ND	.3300	UGG	R
26DNT	.0	LT	.2000	UGG	
3NANIL	.0	ND	2.0000	UGG	R
33DCBD	.0	ND	.7000	UGG	R
4BRPPE	.0	ND	.3300	UGG	R
4CANIL	.0	ND	.2800	UGG	R
4CLPPE	.0	ND	.3300	UGG	R
4CL3C	.0	ND	.2900	UGG	R
4MP	.0	ND	.3300	UGG	R
4NANIL	.0	ND	2.0000	UGG	R
4NP	.0	ND	2.0000	UGG	R
46DN2C	.0	ND	2.0000	UGG	R
ACET	.0	ND	.0100	UGG	R
BDRCLM	.0	ND	.0050	UGG	R
CCL4	.0	LT	.0020	UGG	
CHBR3	.0	LT	.0039	UGG	
CHCL3	.0	LT	.0150	UGG	
CH2CL2	.0	ND	.0050	UGG	R
CH3BR	.0	ND	.0100	UGG	R
CH3CL	.0	LT	.0045	UGG	
CLC6H5	.0	LT	.0020	UGG	
CS2	.0	ND	.0050	UGG	R
C13DCP	.0	LT	.0028	UGG	
C2AVE	.0	ND	.0100	UGG	R
C2H3CL	.0	LT	.0078	UGG	
C2H5CL	.0	LT	.0100	UGG	
C6H6	.0	LT	.0048	UGG	
DBRCLM	.0	LT	.0023	UGG	
ETC6H5	.0	LT	.0100	UGG	
MEC6H5	.0	LT	.0062	UGG	
MEK	.0	ND	.0100	UGG	R
MIBK	.0	ND	.0100	UGG	R
MNBK	.0	ND	.0100	UGG	R
STYR	.0	ND	.0050	UGG	R
TCLEA	.0	LT	.0028	UGG	
TCLEE	.0	LT	.0079	UGG	
TRCLE	.0	LT	.0020	UGG	
T13DCP	.0	LT	.0020	UGG	
UNK293	.0		.0657	UGG	
XYLEN	.0	ND	.0050	UGG	R
11DCE	.0	LT	.0120	UGG	
11DCLE	.0	LT	.0073	UGG	
111TCE	.0	LT	.0059	UGG	
112TCE	.0	LT	.0028	UGG	
12DCE	.0	LT	.0061	UGG	
12DCLE	.0	LT	.0048	UGG	

LM12

89SI

12DCLP
OILGR

00

.0
.0

LT

.0100 UGG
3040.0000 UGG

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 8SS2
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	HG	JB09	.5		.5100	UGG	
			AS	JD11	4.9		490.0000	UGG	
			SB		4.9	LT	.3730	UGG	
			AG	JS05	.5	LT	.6990	UGG	
			BA		.5		80.0000	UGG	
			BE		.5		.7990	UGG	
			CD		.5	LT	.9510	UGG	
			CR		.5	LT	9.3100	UGG	
			CU		.5		150.0000	UGG	
			FE		.5		8000.0000	UGG	
			MN		.5	LT	292.0000	UGG	
			NI		.5		20.0000	UGG	
			PB		.5	LT	92.3000	UGG	
			SE		.5	LT	92.4000	UGG	
			TL		.5	LT	67.6000	UGG	
			ZN		.5		106.0000	UGG	
			ABHC	LM11	4.9	ND	.5000	UGG	R
			AENSLF		4.9	ND	.5000	UGG	R
			ALDRN		4.9	LT	.4200	UGG	
			ANAPNE		4.9	LT	.3400	UGG	
			ANAPYL		4.9	LT	.3100	UGG	
			ANTHRC		4.9	LT	.2900	UGG	
			BAANTR		4.9	LT	.2700	UGG	
			BAPYR		4.9	LT	.1600	UGG	
			BBFANT		4.9	LT	.2500	UGG	
			BBHC		4.9	LT	.3300	UGG	
			BBZP		4.9	ND	.3300	UGG	R
			BENSLF		4.9	ND	1.0000	UGG	R
			BENZOA		4.9	ND	2.0000	UGG	R
			BGHIPY		4.9	LT	.5200	UGG	
			BKFANT		4.9	LT	.2200	UGG	
			BZALC		4.9	ND	.3300	UGG	R
			B2CEXM		4.9	ND	.3300	UGG	R
			B2CIPE		4.9	ND	.3300	UGG	R
			B2CLEE		4.9	LT	.3800	UGG	
			B2EHP		4.9	LT	.6500	UGG	
			CHRY		4.9	LT	.1900	UGG	
			CLDAN		4.9	LT	.8100	UGG	
			CL6BZ		4.9	LT	.3500	UGG	
			CL6CP		4.9	ND	.3300	UGG	R
			CL6ET		4.9	LT	.1400	UGG	
			DBAHA		4.9	LT	.5700	UGG	
			DBHC		4.9	LT	.5700	UGG	
			DBZFUL		4.9	ND	.3300	UGG	R
			DEP		4.9		.3640	UGG	S
			DLDRN		4.9	LT	.8600	UGG	

8552

DMP	4.9	ND	.3300	UGG	R
DNBP	4.9	ND	.3300	UGG	R
DNOP	4.9	LT	.3500	UGG	
ENDRN	4.9	LT	.3800	UGG	
ENDRNK	4.9	ND	1.0000	UGG	R
ESFS04	4.9	ND	1.0000	UGG	R
FANT	4.9	LT	.2100	UGG	
FLRENE	4.9	ND	.3300	UGG	R
HCB0	4.9	LT	.2900	UGG	
HPCL	4.9	LT	.2700	UGG	
ICDPYR	4.9	LT	.4500	UGG	
ISOPHR	4.9	ND	.3300	UGG	R
LIN	4.9	LT	.3000	UGG	
MEXCLR	4.9	ND	5.0000	UGG	R
NAP	4.9	LT	.2800	UGG	
NB	4.9	ND	.3300	UGG	R
NNDNPA	4.9	LT	.1100	UGG	
NNDPA	4.9	ND	.3300	UGG	R
PCB016	4.9	ND	5.0000	UGG	R
PCB221	4.9	ND	5.0000	UGG	R
PCB232	4.9	ND	5.0000	UGG	R
PCB242	4.9	ND	5.0000	UGG	R
PCB248	4.9	ND	5.0000	UGG	R
PCB254	4.9	ND	10.0000	UGG	R
PCB260	4.9	ND	10.0000	UGG	R
PCP	4.9	ND	2.0000	UGG	R
PHANTR	4.9	LT	1.6000	UGG	
PHENOL	4.9	ND	.3300	UGG	R
PPDD	4.9	LT	.3900	UGG	
PPDDE	4.9	LT	.4000	UGG	
PPDDT	4.9	LT	.4800	UGG	
PYR	4.9	LT	.5300	UGG	
TXPHEN	4.9	ND	10.0000	UGG	R
UNK526	4.9		.3420	UGG	
UNK528	4.9		1.3600	UGG	
UNK530	4.9		.2260	UGG	
UNK532	4.9		6.1400	UGG	
UNK536	4.9		8.3400	UGG	
UNK537	4.9		.6760	UGG	
UNK537	4.9		.6820	UGG	D
UNK538	4.9		2.2600	UGG	
UNK538	4.9		3.0800	UGG	D
UNK539	4.9		.2540	UGG	
UNK543	4.9		1.2600	UGG	
UNK545	4.9		.9160	UGG	
UNK548	4.9		.5850	UGG	
UNK550	4.9		.3640	UGG	
UNK552	4.9		.2850	UGG	
UNK553	4.9		1.1600	UGG	
UNK642	4.9		.8770	UGG	
12DCLB	4.9	LT	.3300	UGG	
124TCB	4.9	LT	.1700	UGG	
13DCLB	4.9	LT	.3000	UGG	
14DCLB	4.9	LT	.2900	UGG	
2CLP	4.9	ND	.3300	UGG	R
2CNAP	4.9	LT	.3200	UGG	
2MNAP	4.9		.7320	UGG	S

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2MP	4.9	ND	.3300	UGG	R
2NANIL	4.9	ND	2.0000	UGG	R
2NP	4.9	ND	.3300	UGG	R
24DCLP	4.9	ND	.3300	UGG	R
24DMPN	4.9	ND	.3300	UGG	R
24DNP	4.9	ND	2.0000	UGG	R
24DNT	4.9	LT	.4600	UGG	
245TCP	4.9	ND	2.0000	UGG	R
246TCP	4.9	ND	.3300	UGG	R
26DNT	4.9	LT	.2000	UGG	
3NANIL	4.9	ND	2.0000	UGG	R
33DCBD	4.9	ND	.7000	UGG	R
4BRPPE	4.9	ND	.3300	UGG	R
4CANIL	4.9	ND	.2800	UGG	R
4CLPPE	4.9	ND	.3300	UGG	R
4CL3C	4.9	ND	.2900	UGG	R
4MP	4.9	ND	.3300	UGG	R
4NANIL	4.9	ND	2.0000	UGG	R
4NP	4.9	ND	2.0000	UGG	R
46DN2C	4.9	ND	2.0000	UGG	R
ACET	.5	ND	.0100	UGG	R
BDRCLM	.5	ND	.0050	UGG	R
CCL4	.5	LT	.0020	UGG	
CHBR3	.5	LT	.0039	UGG	
CHCL3	.5	LT	.0150	UGG	
CH2CL2	.5	ND	.0500	UGG	R
CH3BR	.5	ND	.0100	UGG	R
CH3CL	.5	LT	.0045	UGG	
CLC6H5	.5	LT	.0020	UGG	
CS2	.5	ND	.0050	UGG	R
C13DCP	.5	LT	.0028	UGG	
C2AVE	.5	ND	.0100	UGG	R
C2H3CL	.5	LT	.0078	UGG	
C2H5CL	.5	LT	.0100	UGG	
C6H6	.5	LT	.0048	UGG	
DBRCLM	.5	LT	.0023	UGG	
ETC6H5	.5	LT	.0100	UGG	
MEC6H5	.5	LT	.0062	UGG	
MEK	.5	ND	.0100	UGG	R
MIBK	.5	ND	.0100	UGG	R
MNBK	.5	ND	.0100	UGG	R
STYR	.5	ND	.0050	UGG	R
TCLEA	.5	LT	.0028	UGG	
TCLEE	.5	LT	.0079	UGG	
TRCLE	.5	LT	.0020	UGG	
T13DCP	.5	LT	.0020	UGG	
XYLEN	.5	ND	.0050	UGG	R
11DCE	.5	LT	.0120	UGG	
11DCL	.5	LT	.0073	UGG	
111TCE	.5	LT	.0059	UGG	
112TCE	.5	LT	.0028	UGG	
12DCE	.5	LT	.0061	UGG	
12DCL	.5	LT	.0048	UGG	
12DCLP	.5	LT	.0100	UGG	
OILGR	.5	LT	398.0000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 8SS3
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	HG	JB09	.5		.5300	UGG	
			AS	JD11	4.9		300.0000	UGG	
			SB		4.9	LT	.3730	UGG	
			AG	JS05	.5	LT	.6990	UGG	
			BA		.5		140.0000	UGG	
			BE		.5		1.2900	UGG	
			CD		.5	LT	.9510	UGG	
			CR		.5	LT	9.3100	UGG	
			CU		.5		92.0000	UGG	
			FE		.5		19000.0000	UGG	
			MN		.5	LT	292.0000	UGG	
			NI		.5		32.3000	UGG	
			PB		.5		104.0000	UGG	
			SE		.5	LT	92.4000	UGG	
			TL		.5	LT	67.6000	UGG	
			ZN		.5		119.0000	UGG	
			ABHC	LM11	4.9	ND	.5000	UGG	R
			AENSLF		4.9	ND	.5000	UGG	R
			ALDRN		4.9	LT	.4200	UGG	
			ANAPNE		4.9	LT	.3400	UGG	
			ANAPYL		4.9	LT	.3100	UGG	
			ANTHRC		4.9	LT	.2900	UGG	
			BAANTR		4.9	LT	.2700	UGG	
			BAPYR		4.9		.3210	UGG	
			BBFANT		4.9	LT	.2500	UGG	
			BBHC		4.9	LT	.3300	UGG	
			BBZP		4.9	ND	.3300	UGG	R
			BENSLF		4.9	ND	1.0000	UGG	R
			BENZOA		4.9	ND	2.0000	UGG	R
			BGHIPY		4.9	LT	.5200	UGG	
			BKFANT		4.9	LT	.2200	UGG	
			BZALC		4.9	ND	.3300	UGG	R
			B2CEXM		4.9	ND	.3300	UGG	R
			B2CIPE		4.9	ND	.3300	UGG	R
			B2CLEE		4.9	LT	.3800	UGG	
			B2EHP		4.9	LT	.6500	UGG	
			CHRY		4.9		.5030	UGG	
			CLDAN		4.9	LT	.8100	UGG	
			CL6BZ		4.9	LT	.3500	UGG	
			CL6CP		4.9	ND	.3300	UGG	R
			CL6ET		4.9	LT	.1400	UGG	
			DBAHA		4.9	LT	.5700	UGG	
			DBHC		4.9	LT	.5700	UGG	
			DBZFUR		4.9	ND	.3300	UGG	R
			DEP		4.9	ND	.3300	UGG	R
			DLDRN		4.9	LT	.8600	UGG	

8553

DMP	4.9	ND	.3300	UGG	R
DNBP	4.9	ND	.3300	UGG	R
DNOP	4.9	LT	.3500	UGG	
ENDRN	4.9	LT	.3800	UGG	
ENDRNK	4.9	ND	1.0000	UGG	R
ESFS04	4.9	ND	1.0000	UGG	R
FANT	4.9		.7990	UGG	
FLRENE	4.9	ND	.3300	UGG	R
HCB0	4.9	LT	.2900	UGG	
HPCL	4.9	LT	.2700	UGG	
ICDPYR	4.9	LT	.4500	UGG	
ISOPHR	4.9	ND	.3300	UGG	R
LIN	4.9	LT	.3000	UGG	
MEXCLR	4.9	ND	5.0000	UGG	R
NAP	4.9		.3530	UGG	
NB	4.9	ND	.3300	UGG	R
NNDNPA	4.9	LT	.1100	UGG	
NNDPA	4.9	ND	.3300	UGG	R
PCB016	4.9	ND	5.0000	UGG	R
PCB221	4.9	ND	5.0000	UGG	R
PCB232	4.9	ND	5.0000	UGG	R
PCB242	4.9	ND	5.0000	UGG	R
PCB248	4.9	ND	5.0000	UGG	R
PCB254	4.9	ND	10.0000	UGG	R
PCB260	4.9	ND	10.0000	UGG	R
PCP	4.9	ND	2.0000	UGG	R
PHANTR	4.9	LT	1.6000	UGG	
PHENOL	4.9	ND	.3300	UGG	R
PPDDD	4.9	LT	.3900	UGG	
PPDDE	4.9	LT	.4000	UGG	
PPDDT	4.9	LT	.4800	UGG	
PYR	4.9		.5150	UGG	
TXPHEN	4.9	ND	10.0000	UGG	R
UNK527	4.9		.6300	UGG	
UNK528	4.9		1.6000	UGG	
UNK532	4.9		6.6700	UGG	
UNK536	4.9		9.4900	UGG	
UNK537	4.9		.9050	UGG	
UNK537	4.9		.8740	UGG	D
UNK538	4.9		3.7900	UGG	D
UNK538	4.9		2.7700	UGG	
UNK539	4.9		.6130	UGG	
UNK543	4.9		1.4000	UGG	
UNK545	4.9		1.6200	UGG	
UNK553	4.9		1.0200	UGG	
UNK563	4.9		.4790	UGG	
UNK570	4.9		.3990	UGG	
UNK572	4.9		.4030	UGG	
UNK576	4.9		.4840	UGG	
UNK580	4.9		.4650	UGG	
UNK582	4.9		.5160	UGG	
UNK587	4.9		.5710	UGG	
UNK592	4.9		.6530	UGG	
12DCLB	4.9	LT	.3300	UGG	
124TCB	4.9	LT	.1700	UGG	
13DCLB	4.9	LT	.3000	UGG	
14DCLB	4.9	LT	.2900	UGG	

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2CLP	4.9	ND	.3300	UGG	R
2CNAP	4.9	LT	.3200	UGG	
2MNAP	4.9		6.7100	UGG	S
2MP	4.9	ND	.3300	UGG	R
2NANIL	4.9	ND	2.0000	UGG	R
2NP	4.9	ND	.3300	UGG	R
24DCLP	4.9	ND	.3300	UGG	R
24DMPN	4.9	ND	.3300	UGG	R
24DNP	4.9	ND	2.0000	UGG	R
24DNT	4.9	LT	.4600	UGG	
245TCP	4.9	ND	2.0000	UGG	R
246TCP	4.9	ND	.3300	UGG	R
26DNT	4.9	LT	.2000	UGG	
3NANIL	4.9	ND	2.0000	UGG	R
33DCBD	4.9	ND	.7000	UGG	R
4BRPPE	4.9	ND	.3300	UGG	R
4CANIL	4.9	ND	.2800	UGG	R
4CLPPE	4.9	ND	.3300	UGG	R
4CL3C	4.9	ND	.2900	UGG	R
4MP	4.9	ND	.3300	UGG	R
4NANIL	4.9	ND	2.0000	UGG	R
4NP	4.9	ND	2.0000	UGG	R
46DN2C	4.9	ND	2.0000	UGG	R
ACET	.5	ND	.0100	UGG	R
BDRCLM	.5	ND	.0050	UGG	R
CCL4	.5	LT	.0020	UGG	
CHBR3	.5	LT	.0039	UGG	
CHCL3	.5	LT	.0150	UGG	
CH2CL2	.5	ND	.0500	UGG	R
CH3BR	.5	ND	.0100	UGG	R
CH3CL	.5	LT	.0045	UGG	
CLC6H5	.5	LT	.0020	UGG	
CS2	.5	ND	.0050	UGG	R
C13DCP	.5	LT	.0028	UGG	
C2AVE	.5	ND	.0100	UGG	R
C2H3CL	.5	LT	.0078	UGG	
C2H5CL	.5	LT	.0100	UGG	
C6H6	.5	LT	.0048	UGG	
DBRCLM	.5	LT	.0023	UGG	
ETC6H5	.5	LT	.0100	UGG	
MEC6H5	.5	LT	.0062	UGG	
MEK	.5	ND	.0100	UGG	R
MIBK	.5	ND	.0100	UGG	R
MNBK	.5	ND	.0100	UGG	R
STYR	.5	ND	.0050	UGG	R
TCLEA	.5	LT	.0028	UGG	
TCLEE	.5	LT	.0079	UGG	
TRCLE	.5	LT	.0020	UGG	
T13DCP	.5	LT	.0020	UGG	
XYLEN	.5	ND	.0050	UGG	R
11DCE	.5	LT	.0120	UGG	
11DCLE	.5	LT	.0073	UGG	
111TCE	.5	LT	.0059	UGG	
112TCE	.5	LT	.0028	UGG	
12DCE	.5	LT	.0061	UGG	
12DCLE	.5	LT	.0048	UGG	
12DCLP	.5	LT	.0100	UGG	

LM12

8553

OILGR

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.5

171.0000 UGG

C-161

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 8SS4
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	HG	JB09	.5		.2530	UGG	
			AS	JD11	4.9		30.6000	UGG	
			SB		4.9	LT	.3730	UGG	
			AG	JS05	.5	LT	.6990	UGG	
			BA		.5		33.6000	UGG	
			BE		.5		.4170	UGG	
			CD		.5	LT	.9510	UGG	
			CR		.5	LT	9.3100	UGG	
			CU		.5		29.4000	UGG	
			FE		.5		5000.0000	UGG	
			MN		.5	LT	292.0000	UGG	
			NI		.5		11.5000	UGG	
			PB		.5	LT	92.3000	UGG	
			SE		.5	LT	92.4000	UGG	
			TL		.5	LT	67.6000	UGG	
			ZN		.5		53.3000	UGG	
			ABHC	LM11	4.9	ND	.5000	UGG	R
			AENSLF		4.9	ND	.5000	UGG	R
			ALDRN		4.9	LT	.4200	UGG	
			ANAPNE		4.9		.3350	UGG	
			ANAPYL		4.9	LT	.3100	UGG	
			ANTHRC		4.9		.5560	UGG	
			BAANTR		4.9		.8000	UGG	
			BAPYR		4.9		.7350	UGG	
			BBFANT		4.9		.5360	UGG	
			BBHC		4.9	LT	.3300	UGG	
			BBZP		4.9	ND	.3300	UGG	R
			BENSLF		4.9	ND	1.0000	UGG	R
			BENZOA		4.9	ND	2.0000	UGG	R
			BGHIPY		4.9	LT	.5200	UGG	
			BKFANT		4.9	LT	.2200	UGG	
			BZALC		4.9	ND	.3300	UGG	R
			B2CEXM		4.9	ND	.3300	UGG	R
			B2CIPE		4.9	ND	.3300	UGG	R
			B2CLEE		4.9	LT	.3800	UGG	
			B2EHP		4.9	LT	.6500	UGG	
			CHRY		4.9		.8580	UGG	
			CLDAN		4.9	LT	.8100	UGG	
			CL6BZ		4.9	LT	.3500	UGG	
			CL6CP		4.9	ND	.3300	UGG	R
			CL6ET		4.9	LT	.1400	UGG	
			OBAHA		4.9	LT	.5700	UGG	
			DBHC		4.9	LT	.5700	UGG	
			DBZFUR		4.9	ND	.3300	UGG	R
			DEP		4.9		1.5600	UGG	S
			DLDRN		4.9	LT	.8600	UGG	

8554

DMP	4.9	ND	.3300	UGG	R
DNBP	4.9	ND	.3300	UGG	R
DNOP	4.9	LT	.3500	UGG	
ENDRN	4.9	LT	.3800	UGG	
ENDRNK	4.9	ND	1.0000	UGG	R
ESFS04	4.9	ND	1.0000	UGG	R
FANT	4.9		1.8400	UGG	
FLRENE	4.9	ND	.3300	UGG	R
HCBD	4.9	LT	.2900	UGG	
HPCL	4.9	LT	.2700	UGG	
ICDPYR	4.9	LT	.4500	UGG	
ISOPHR	4.9	ND	.3300	UGG	R
LIN	4.9	LT	.3000	UGG	
MEXCLR	4.9	ND	5.0000	UGG	R
NAP	4.9	LT	.2800	UGG	
NB	4.9	ND	.3300	UGG	R
NNDNPA	4.9	LT	.1100	UGG	
NNDPA	4.9	ND	.3300	UGG	R
PCB016	4.9	ND	5.0000	UGG	R
PCB221	4.9	ND	5.0000	UGG	R
PCB232	4.9	ND	5.0000	UGG	R
PCB242	4.9	ND	5.0000	UGG	R
PCB248	4.9	ND	5.0000	UGG	R
PCB254	4.9	ND	10.0000	UGG	R
PCB260	4.9	ND	10.0000	UGG	R
PCP	4.9	ND	2.0000	UGG	R
PHANTR	4.9	LT	1.6000	UGG	
PHENOL	4.9	ND	.3300	UGG	R
PPDD	4.9	LT	.3900	UGG	
PPDDE	4.9	LT	.4000	UGG	
PPDOT	4.9	LT	.4800	UGG	
PYR	4.9		1.2700	UGG	
TXPHEN	4.9	ND	10.0000	UGG	R
UNK527	4.9		.8680	UGG	
UNK528	4.9		1.6300	UGG	
UNK530	4.9		.2990	UGG	
UNK532	4.9		7.0800	UGG	
UNK536	4.9		8.5200	UGG	
UNK537	4.9		.8270	UGG	
UNK537	4.9		.9150	UGG	D
UNK538	4.9		3.7000	UGG	D
UNK538	4.9		2.7300	UGG	
UNK539	4.9		.3110	UGG	
UNK543	4.9		1.0700	UGG	
UNK545	4.9		1.6500	UGG	
UNK548	4.9		.3960	UGG	
UNK550	4.9		.5490	UGG	
UNK552	4.9		.4310	UGG	
UNK552	4.9		.6790	UGG	D
UNK553	4.9		1.1300	UGG	
UNK607	4.9		.2400	UGG	
12DCLB	4.9	LT	.3300	UGG	
124TCB	4.9	LT	.1700	UGG	
13DCLB	4.9	LT	.3000	UGG	
14DCLB	4.9	LT	.2900	UGG	
2CLP	4.9	ND	.3300	UGG	R
2CNAP	4.9	LT	.3200	UGG	

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2MNAP	4.9		1.7300	UGG	S
2MP	4.9	ND	.3300	UGG	R
2NANIL	4.9	ND	2.0000	UGG	R
2NP	4.9	ND	.3300	UGG	R
24DCLP	4.9	ND	.3300	UGG	R
24DMPN	4.9	ND	.3300	UGG	R
24DNP	4.9	ND	2.0000	UGG	R
24DNT	4.9	LT	.4600	UGG	
245TCP	4.9	ND	2.0000	UGG	R
246TCP	4.9	ND	.3300	UGG	R
26DNT	4.9	LT	.2000	UGG	
3NANIL	4.9	ND	2.0000	UGG	R
33DCBD	4.9	ND	.7000	UGG	R
4BRPPE	4.9	ND	.3300	UGG	R
4CANIL	4.9	ND	.2800	UGG	R
4CLPPE	4.9	ND	.3300	UGG	R
4CL3C	4.9	ND	.2900	UGG	R
4MP	4.9	ND	.3300	UGG	R
4NANIL	4.9	ND	2.0000	UGG	R
4NP	4.9	ND	2.0000	UGG	R
46DN2C	4.9	ND	2.0000	UGG	R
ACET	.5	ND	.0100	UGG	R
BDRCLM	.5	ND	.0050	UGG	R
CCL4	.5	LT	.0020	UGG	
CHBR3	.5	LT	.0039	UGG	
CHCL3	.5	LT	.0150	UGG	
CH2CL2	.5	ND	.0500	UGG	R
CH3BR	.5	ND	.0100	UGG	R
CH3CL	.5	LT	.0045	UGG	
CLC6H5	.5	LT	.0020	UGG	
CS2	.5	ND	.0050	UGG	R
C13DCP	.5	LT	.0028	UGG	
C2AVE	.5	ND	.0100	UGG	R
C2H3CL	.5	LT	.0078	UGG	
C2H5CL	.5	LT	.0100	UGG	
C6H6	.5	LT	.0048	UGG	
DBRCLM	.5	LT	.0023	UGG	
ETC6H5	.5	LT	.0100	UGG	
MEC6H5	.5	LT	.0062	UGG	
MEK	.5	ND	.0100	UGG	R
MIBK	.5	ND	.0100	UGG	R
MNBK	.5	ND	.0100	UGG	R
STYR	.5	ND	.0050	UGG	R
TCLEA	.5	LT	.0028	UGG	
TCLEE	.5	LT	.0079	UGG	
TRCLE	.5	LT	.0020	UGG	
T13DCP	.5	LT	.0020	UGG	
XYLEN	.5	ND	.0050	UGG	R
11DCE	.5	LT	.0120	UGG	
11DCLE	.5	LT	.0073	UGG	
111TCE	.5	LT	.0059	UGG	
112TCE	.5	LT	.0028	UGG	
12DCE	.5	LT	.0061	UGG	
12DCLE	.5	LT	.0048	UGG	
12DCLP	.5	LT	.0100	UGG	
OILGR	.5		216.0000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 8555
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	HG	JB09	4.3		.0960	UGG	
			AS	JD11	4.2		79.0000	UGG	
			SB		4.2	LT	.3730	UGG	
			AG	JS05	4.3	LT	.6990	UGG	
			BA		4.3		210.0000	UGG	
			BE		4.3		1.6400	UGG	
			CD		4.3	LT	.9510	UGG	
			CR		4.3	LT	9.3100	UGG	
			CU		4.3		34.3000	UGG	
			FE		4.3		15000.0000	UGG	
			MN		4.3	LT	292.0000	UGG	
			NI		4.3		19.1000	UGG	
			PB		4.3	LT	92.3000	UGG	
			SE		4.3	LT	92.4000	UGG	
			TL		4.3	LT	67.6000	UGG	
			ZN		4.3		55.3000	UGG	
			ABHC	LM11	4.2	ND	.5000	UGG	R
			AENSLF		4.2	ND	.5000	UGG	R
			ALDRN		4.2	LT	.4200	UGG	
			ANAPNE		4.2	LT	.3400	UGG	
			ANAPYL		4.2	LT	.3100	UGG	
			ANTHRC		4.2	LT	.2900	UGG	
			BAANTR		4.2	LT	.2700	UGG	
			BAPYR		4.2	LT	.1600	UGG	
			BBFANT		4.2	LT	.2500	UGG	
			BBHC		4.2	LT	.3300	UGG	
			BBZP		4.2	ND	.3300	UGG	R
			BENSLF		4.2	ND	1.0000	UGG	R
			BENZOA		4.2	ND	2.0000	UGG	R
			BGHIPY		4.2	LT	.5200	UGG	
			BKFANT		4.2	LT	.2200	UGG	
			BZALC		4.2	ND	.3300	UGG	R
			B2CEXM		4.2	ND	.3300	UGG	R
			B2CIPE		4.2	ND	.3300	UGG	R
			B2CLEE		4.2	LT	.3800	UGG	
			B2EHP		4.2	LT	.6500	UGG	
			CHRY		4.2	LT	.1900	UGG	
			CLDAN		4.2	LT	.8100	UGG	
			CL6BZ		4.2	LT	.3500	UGG	
			CL6CP		4.2	ND	.3300	UGG	R
			CL6ET		4.2	LT	.1400	UGG	
			DBAHA		4.2	LT	.5700	UGG	
			DBHC		4.2	LT	.5700	UGG	
			DBZFUR		4.2	ND	.3300	UGG	R
			DEP		4.2		.5090	UGG	S
			DLDRN		4.2	LT	.8600	UGG	

8555

DMP	4.2	ND	.3300	UGG	R
DNBP	4.2	ND	.3300	UGG	R
DNOP	4.2	LT	.3500	UGG	
ENDRN	4.2	LT	.3800	UGG	
ENDRNK	4.2	ND	1.0000	UGG	R
ESFS04	4.2	ND	1.0000	UGG	R
FANT	4.2	LT	.2100	UGG	
FLRENE	4.2	ND	.3300	UGG	R
HCBD	4.2	LT	.2900	UGG	
HPCL	4.2	LT	.2700	UGG	
ICDPYR	4.2	LT	.4500	UGG	
ISOPHR	4.2	ND	.3300	UGG	R
LIN	4.2	LT	.3000	UGG	
MEXCLR	4.2	ND	5.0000	UGG	R
NAP	4.2	LT	.2800	UGG	
NB	4.2	ND	.3300	UGG	R
NNDNPA	4.2	LT	.1100	UGG	
NNDPA	4.2	ND	.3300	UGG	R
PCB016	4.2	ND	5.0000	UGG	R
PCB221	4.2	ND	5.0000	UGG	R
PCB232	4.2	ND	5.0000	UGG	R
PCB242	4.2	ND	5.0000	UGG	R
PCB248	4.2	ND	5.0000	UGG	R
PCB254	4.2	ND	10.0000	UGG	R
PCB260	4.2	ND	10.0000	UGG	R
PCP	4.2	ND	2.0000	UGG	R
PHANTR	4.2	LT	1.6000	UGG	
PHENOL	4.2	ND	.3300	UGG	R
PPDD	4.2	LT	.3900	UGG	
PPDDE	4.2	LT	.4000	UGG	
PPDDT	4.2	LT	.4800	UGG	
PYR	4.2	LT	.5300	UGG	
TXPHEN	4.2	ND	10.0000	UGG	R
UNK527	4.2		.7180	UGG	
UNK528	4.2		1.3700	UGG	
UNK532	4.2		6.3900	UGG	
UNK536	4.2		7.0700	UGG	
UNK537	4.2		.7960	UGG	
UNK537	4.2		.7780	UGG	D
UNK538	4.2		2.5500	UGG	
UNK538	4.2		3.3800	UGG	D
UNK543	4.2		.4060	UGG	
UNK544	4.2		.6680	UGG	
UNK550	4.2		.8040	UGG	
UNK552	4.2		1.5300	UGG	
UNK553	4.2		.6840	UGG	
UNK554	4.2		.3390	UGG	
UNK554	4.2		.3310	UGG	D
UNK592	4.2		.2690	UGG	
UNK593	4.2		.5010	UGG	
12DCLB	4.2	LT	.3300	UGG	
124TCB	4.2	LT	.1700	UGG	
13DCLB	4.2	LT	.3000	UGG	
14DCLB	4.2	LT	.2900	UGG	
2CLP	4.2	ND	.3300	UGG	R
2CNAP	4.2	LT	.3200	UGG	
2MNAP	4.2		1.2000	UGG	S

8555

2MP	4.2	ND	.3300	UGG	R
2NANIL	4.2	ND	2.0000	UGG	R
2NP	4.2	ND	.3300	UGG	R
24DCLP	4.2	ND	.3300	UGG	R
24DMPN	4.2	ND	.3300	UGG	R
24DNP	4.2	ND	2.0000	UGG	R
24DNT	4.2	LT	.4600	UGG	
245TCP	4.2	ND	2.0000	UGG	R
246TCP	4.2	ND	.3300	UGG	R
26DNT	4.2	LT	.2000	UGG	
3NANIL	4.2	ND	2.0000	UGG	R
33DCBD	4.2	ND	.7000	UGG	R
4BRPPE	4.2	ND	.3300	UGG	R
4CANIL	4.2	ND	.2800	UGG	R
4CLPPE	4.2	ND	.3300	UGG	R
4CL3C	4.2	ND	.2900	UGG	R
4MP	4.2	ND	.3300	UGG	R
4NANIL	4.2	ND	2.0000	UGG	R
4NP	4.2	ND	2.0000	UGG	R
46DN2C	4.2	ND	2.0000	UGG	R
ACET	4.3	ND	.0100	UGG	R
BDRCLM	4.3	ND	.0050	UGG	R
CCL4	4.3	LT	.0020	UGG	
CHBR3	4.3	LT	.0039	UGG	
CHCL3	4.3	LT	.0150	UGG	
CH2CL2	4.3	ND	.0500	UGG	R
CH3BR	4.3	ND	.0100	UGG	R
CH3CL	4.3	LT	.0045	UGG	
CLC6H5	4.3	LT	.0020	UGG	
CS2	4.3	ND	.0050	UGG	R
C13DCP	4.3	LT	.0028	UGG	
C2AVE	4.3	ND	.0100	UGG	R
C2H3CL	4.3	LT	.0078	UGG	
C2H5CL	4.3	LT	.0100	UGG	
C6H6	4.3	LT	.0048	UGG	
DBRCLM	4.3	LT	.0023	UGG	
ETC6H5	4.3	LT	.0100	UGG	
MEC6H5	4.3	LT	.0062	UGG	
MEK	4.3	ND	.0100	UGG	R
MIBK	4.3	ND	.0100	UGG	R
MNBK	4.3	ND	.0100	UGG	R
STYR	4.3	ND	.0050	UGG	R
TCLEA	4.3	LT	.0028	UGG	
TCLEE	4.3	LT	.0079	UGG	
TRCLE	4.3	LT	.0020	UGG	
T13DCP	4.3	LT	.0020	UGG	
XYLEN	4.3	ND	.0050	UGG	R
11DCE	4.3	LT	.0120	UGG	
11DCLE	4.3	LT	.0073	UGG	
111TCE	4.3	LT	.0059	UGG	
112TCE	4.3	LT	.0028	UGG	
12DCE	4.3	LT	.0061	UGG	
12DCLE	4.3	LT	.0048	UGG	
12DCLP	4.3	LT	.0100	UGG	
OILGR	4.3		48.5000	UGG	

LM12

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RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : 9SS1
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/15/88	ME	ACET	LM12	1.0	ND	.0100	UGG	R
			BDRCLM		1.0	ND	.0050	UGG	R
			CCL4		1.0	LT	.0020	UGG	
			CHBR3		1.0	LT	.0039	UGG	
			CHCL3		1.0	LT	.0150	UGG	
			CH2CL2		1.0	ND	.0050	UGG	R
			CH3BR		1.0	ND	.0100	UGG	R
			CH3CL		1.0	LT	.0045	UGG	
			CLC6H5		1.0	LT	.0020	UGG	
			CS2		1.0	ND	.0050	UGG	R
			C13DCP		1.0	LT	.0028	UGG	
			C2AVE		1.0	ND	.0100	UGG	R
			C2H3CL		1.0	LT	.0078	UGG	
			C2H5CL		1.0	LT	.0100	UGG	
			C6H6		1.0	LT	.0048	UGG	
			DBRCLM		1.0	LT	.0023	UGG	
			ETC6H5		1.0	LT	.0100	UGG	
			MEC6H5		1.0	LT	.0062	UGG	
			MEK		1.0	ND	.0100	UGG	R
			MIBK		1.0	ND	.0100	UGG	R
			MNBK		1.0	ND	.0100	UGG	R
			STYR		1.0	ND	.0050	UGG	R
			TCLEA		1.0	LT	.0028	UGG	
			TCLEE		1.0	LT	.0079	UGG	
			TRCLE		1.0	LT	.0020	UGG	
			T13DCP		1.0	LT	.0020	UGG	
			XYLEN		1.0	ND	.0050	UGG	R
			11DCE		1.0	LT	.0120	UGG	
			11DCLE		1.0	LT	.0073	UGG	
			111TCE		1.0	LT	.0059	UGG	
			112TCE		1.0	LT	.0028	UGG	
			12DCE		1.0	LT	.0061	UGG	
			12DCLE		1.0	LT	.0048	UGG	
			12DCLP		1.0	LT	.0100	UGG	

RUN DATE: 13 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSO ANALYTICAL RESULTS
SITE TYPE : BORE
SITE ID : TRIPBLK
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/11/88	ME	ACET	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	ACET	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	ACET	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	BDRCLM	LM12	.0	ND	.0050	UGG	R
C	08/12/88	ME	BDRCLM	LM12	.0	ND	.0050	UGG	R
C	08/16/88	ME	BDRCLM	LM12	.0	ND	.0050	UGG	R
C	08/11/88	ME	CCL4	LM12	.0	LT	.0020	UGG	
C	08/12/88	ME	CCL4	LM12	.0	LT	.0020	UGG	
C	08/16/88	ME	CCL4	LM12	.0	LT	.0020	UGG	
C	08/11/88	ME	CHBR3	LM12	.0	LT	.0039	UGG	
C	08/12/88	ME	CHBR3	LM12	.0	LT	.0039	UGG	
C	08/16/88	ME	CHBR3	LM12	.0	LT	.0039	UGG	
C	08/11/88	ME	CHCL3	LM12	.0	LT	.0150	UGG	
C	08/12/88	ME	CHCL3	LM12	.0	LT	.0150	UGG	
C	08/16/88	ME	CHCL3	LM12	.0	LT	.0150	UGG	
C	08/11/88	ME	CH2CL2	LM12	.0	ND	.0500	UGG	R
C	08/12/88	ME	CH2CL2	LM12	.0	ND	.0500	UGG	R
C	08/16/88	ME	CH2CL2	LM12	.0	ND	.0500	UGG	R
C	08/11/88	ME	CH3BR	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	CH3BR	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	CH3BR	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	CH3CL	LM12	.0	LT	.0045	UGG	
C	08/12/88	ME	CH3CL	LM12	.0	LT	.0045	UGG	
C	08/16/88	ME	CH3CL	LM12	.0	LT	.0045	UGG	
C	08/11/88	ME	CLC6H5	LM12	.0	LT	.0020	UGG	
C	08/12/88	ME	CLC6H5	LM12	.0	LT	.0020	UGG	
C	08/16/88	ME	CLC6H5	LM12	.0	LT	.0020	UGG	
C	08/11/88	ME	CS2	LM12	.0	ND	.0050	UGG	R
C	08/12/88	ME	CS2	LM12	.0	ND	.0050	UGG	R
C	08/16/88	ME	CS2	LM12	.0	ND	.0050	UGG	R
C	08/11/88	ME	C13DCP	LM12	.0	LT	.0028	UGG	
C	08/12/88	ME	C13DCP	LM12	.0	LT	.0028	UGG	
C	08/16/88	ME	C13DCP	LM12	.0	LT	.0028	UGG	
C	08/11/88	ME	C2AVE	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	C2AVE	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	C2AVE	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	C2H3CL	LM12	.0	LT	.0078	UGG	
C	08/12/88	ME	C2H3CL	LM12	.0	LT	.0078	UGG	
C	08/16/88	ME	C2H3CL	LM12	.0	LT	.0078	UGG	
C	08/11/88	ME	C2H5CL	LM12	.0	LT	.0100	UGG	
C	08/12/88	ME	C2H5CL	LM12	.0	LT	.0100	UGG	
C	08/16/88	ME	C2H5CL	LM12	.0	LT	.0100	UGG	
C	08/11/88	ME	C6H6	LM12	.0	LT	.0048	UGG	
C	08/12/88	ME	C6H6	LM12	.0	LT	.0048	UGG	
C	08/16/88	ME	C6H6	LM12	.0	LT	.0048	UGG	
C	08/11/88	ME	DBRCLM	LM12	.0	LT	.0023	UGG	

TRIPBLANK

C	08/12/88	ME	DBRCLM	LM12	.0	LT	.0023	UGG	
C	08/16/88	ME	DBRCLM	LM12	.0	LT	.0023	UGG	
C	08/11/88	ME	ETC6H5	LM12	.0	LT	.0100	UGG	
C	08/12/88	ME	ETC6H5	LM12	.0	LT	.0100	UGG	
C	08/16/88	ME	ETC6H5	LM12	.0	LT	.0100	UGG	
C	08/11/88	ME	MEC6H5	LM12	.0	LT	.0062	UGG	
C	08/12/88	ME	MEC6H5	LM12	.0	LT	.0062	UGG	
C	08/16/88	ME	MEC6H5	LM12	.0	LT	.0062	UGG	
C	08/11/88	ME	MEK	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	MEK	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	MEK	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	MIBK	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	MIBK	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	MIBK	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	MNBK	LM12	.0	ND	.0100	UGG	R
C	08/12/88	ME	MNBK	LM12	.0	ND	.0100	UGG	R
C	08/16/88	ME	MNBK	LM12	.0	ND	.0100	UGG	R
C	08/11/88	ME	STYR	LM12	.0	ND	.0050	UGG	R
C	08/12/88	ME	STYR	LM12	.0	ND	.0050	UGG	R
C	08/16/88	ME	STYR	LM12	.0	ND	.0050	UGG	R
C	08/11/88	ME	TCLEA	LM12	.0	LT	.0028	UGG	
C	08/12/88	ME	TCLEA	LM12	.0	LT	.0028	UGG	
C	08/16/88	ME	TCLEA	LM12	.0	LT	.0028	UGG	
C	08/11/88	ME	TCLEE	LM12	.0	LT	.0079	UGG	
C	08/12/88	ME	TCLEE	LM12	.0	LT	.0079	UGG	
C	08/16/88	ME	TCLEE	LM12	.0	LT	.0079	UGG	
C	08/11/88	ME	TRCLE	LM12	.0	LT	.0020	UGG	
C	08/12/88	ME	TRCLE	LM12	.0	LT	.0020	UGG	
C	08/16/88	ME	TRCLE	LM12	.0	LT	.0020	UGG	
C	08/11/88	ME	T13DCP	LM12	.0	LT	.0020	UGG	
C	08/12/88	ME	T13DCP	LM12	.0	LT	.0020	UGG	
C	08/16/88	ME	T13DCP	LM12	.0	LT	.0020	UGG	
C	08/11/88	ME	XYLEN	LM12	.0	ND	.0050	UGG	R
C	08/12/88	ME	XYLEN	LM12	.0	ND	.0050	UGG	R
C	08/16/88	ME	XYLEN	LM12	.0	ND	.0050	UGG	R
C	08/11/88	ME	11DCE	LM12	.0	LT	.0120	UGG	
C	08/12/88	ME	11DCE	LM12	.0	LT	.0120	UGG	
C	08/16/88	ME	11DCE	LM12	.0	LT	.0120	UGG	
C	08/11/88	ME	11DCLE	LM12	.0	LT	.0073	UGG	
C	08/12/88	ME	11DCLE	LM12	.0	LT	.0073	UGG	
C	08/16/88	ME	11DCLE	LM12	.0	LT	.0073	UGG	
C	08/11/88	ME	111TCE	LM12	.0	LT	.0059	UGG	
C	08/12/88	ME	111TCE	LM12	.0	LT	.0059	UGG	
C	08/16/88	ME	111TCE	LM12	.0	LT	.0059	UGG	
C	08/11/88	ME	112TCE	LM12	.0	LT	.0028	UGG	
C	08/12/88	ME	112TCE	LM12	.0	LT	.0028	UGG	
C	08/16/88	ME	112TCE	LM12	.0	LT	.0028	UGG	
C	08/11/88	ME	12DCE	LM12	.0	LT	.0061	UGG	
C	08/12/88	ME	12DCE	LM12	.0	LT	.0061	UGG	
C	08/16/88	ME	12DCE	LM12	.0	LT	.0061	UGG	
C	08/11/88	ME	12DCLE	LM12	.0	LT	.0048	UGG	
C	08/12/88	ME	12DCLE	LM12	.0	LT	.0048	UGG	
C	08/16/88	ME	12DCLE	LM12	.0	LT	.0048	UGG	
C	08/11/88	ME	12DCLP	LM12	.0	LT	.0100	UGG	
C	08/12/88	ME	12DCLP	LM12	.0	LT	.0100	UGG	
C	08/16/88	ME	12DCLP	LM12	.0	LT	.0100	UGG	

V. Tank Samples

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T9
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	PB	SD11	8.1		210.0000	UGL	
			TPH	99	8.1		74200.0000	UGL	

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T17
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	ACET	UM12	7.4		75.0000	UGL	S
			BDRCLM		7.4	ND	5.0000	UGL	R
			CCL4		7.4	LT	1.0000	UGL	
			CHBR3		7.4	LT	3.7000	UGL	
			CHCL3		7.4	LT	1.0000	UGL	
			CH2CL2		7.4	LT	23.0000	UGL	
			CH3BR		7.4	ND	10.0000	UGL	R
			CH3CL		7.4	LT	1.8000	UGL	
			CLC6H5		7.4	LT	1.2000	UGL	
			CS2		7.4	ND	5.0000	UGL	R
			C13DCP		7.4	LT	1.8000	UGL	
			C2AVE		7.4	ND	10.0000	UGL	R
			C2H3CL		7.4	LT	13.0000	UGL	
			C2H5CL		7.4	LT	6.9000	UGL	
			C6H6		7.4	LT	1.7000	UGL	
			DBRCLM		7.4	LT	1.8000	UGL	
			ETC6H5		7.4		36.1000	UGL	
			MEC6H5		7.4	LT	1.8000	UGL	
			MEK		7.4	ND	10.0000	UGL	R
			MIBK		7.4	ND	10.0000	UGL	R
			MNBK		7.4	ND	10.0000	UGL	R
			STYR		7.4	ND	5.0000	UGL	R
			TCLEA		7.4	LT	7.1000	UGL	
			TCLEE		7.4	LT	2.3000	UGL	
			TRCLE		7.4	LT	1.0000	UGL	
			T13DCP		7.4	LT	1.6000	UGL	
			UNK116		7.4		49.9000	UGL	
			UNK168		7.4		12.3000	UGL	
			UNK172		7.4		17.6000	UGL	
			UNK225		7.4		12.9000	UGL	
			UNK309		7.4		8.5000	UGL	
			UNK311		7.4		37.7000	UGL	
			UNK340		7.4		10.9000	UGL	
			UNK341		7.4		14.3000	UGL	
			UNK382		7.4		543.0000	UGL	
			UNK398		7.4		210.0000	UGL	
			XYLEN		7.4		153.0000	UGL	S
			11DCE		7.4	LT	6.8000	UGL	
			11DCLE		7.4	LT	2.7000	UGL	
			111TCE		7.4	LT	1.0000	UGL	
			112TCE		7.4	LT	1.7000	UGL	
			12DCE		7.4	LT	2.2000	UGL	
			12DCLE		7.4	LT	1.0000	UGL	
			12DCLP		7.4	LT	3.2000	UGL	
			TPH	99	7.4	LT	2000.0000	UGL	

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RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T18
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	ACET	UM12	1.8	ND	10.0000	UGL	R
			BDRCLM		1.8	ND	5.0000	UGL	R
			CCL4		1.8	LT	1.0000	UGL	
			CHBR3		1.8	LT	3.7000	UGL	
			CHCL3		1.8	LT	1.0000	UGL	
			CH2CL2		1.8	LT	23.0000	UGL	
			CH3BR		1.8	ND	10.0000	UGL	R
			CH3CL		1.8	LT	1.8000	UGL	
			CLC6H5		1.8	LT	1.2000	UGL	
			CS2		1.8	ND	5.0000	UGL	R
			C13DCP		1.8	LT	1.8000	UGL	
			C2AVE		1.8	ND	10.0000	UGL	R
			C2H3CL		1.8	LT	13.0000	UGL	
			C2H5CL		1.8	LT	6.9000	UGL	
			C6H6		1.8	LT	1.7000	UGL	
			DBRCLM		1.8	LT	1.8000	UGL	
			ETC6H5		1.8	LT	1.4000	UGL	
			MEC6H5		1.8	LT	1.8000	UGL	
			MEK		1.8	ND	10.0000	UGL	R
			MIBK		1.8	ND	10.0000	UGL	R
			MNBK		1.8	ND	10.0000	UGL	R
			STYR		1.8	ND	5.0000	UGL	R
			TCLEA		1.8	LT	7.1000	UGL	
			TCLEE		1.8	LT	2.3000	UGL	
			TRCLE		1.8	LT	1.0000	UGL	
			T13DCP		1.8	LT	1.6000	UGL	
			UNK001		1.8		13.9000	UGL	
			UNK082		1.8		6.7500	UGL	
			UNK083		1.8		11.4000	UGL	
			UNK310		1.8		15.6000	UGL	
			UNK320		1.8		10.1000	UGL	
			UNK321		1.8		5.2200	UGL	
			UNK322		1.8		8.3700	UGL	
			XYLEN		1.8	ND	5.0000	UGL	R
			11DCE		1.8	LT	6.8000	UGL	
			11DCLE		1.8	LT	2.7000	UGL	
			111TCE		1.8	LT	1.0000	UGL	
			112TCE		1.8	LT	1.7000	UGL	
			12DCE		1.8	LT	2.2000	UGL	
			12DCLE		1.8	LT	1.0000	UGL	
			12DCLP		1.8	LT	3.2000	UGL	
			TPH	99	1.8	LT	2000.0000	UGL	

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RUN DATE: 12 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSE ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T19
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	CD	JS05	3.2		2.9200	UGG	
			CR		3.2		149.0000	UGG	
			PB		3.2		1900.0000	UGG	
			ZN		3.2		720.0000	UGG	
			ABHC	LM11	3.2	ND	.5000	UGG	R
			AENSLF		3.2	ND	.5000	UGG	R
			ALDRN		3.2	LT	.4200	UGG	
			ANAPNE		3.2		.7240	UGG	
			ANAPYL		3.2	LT	.3100	UGG	
			ANTHRC		3.2		1.3100	UGG	
			BAANTR		3.2		9.4400	UGG	
			BAPYR		3.2		10.4000	UGG	
			BBFANT		3.2		11.0000	UGG	
			BBHC		3.2	LT	.3300	UGG	
			BBZP		3.2	ND	.3300	UGG	R
			BENSLF		3.2	ND	1.0000	UGG	R
			BENZOA		3.2		6.1600	UGG	S
			BGHIPY		3.2	LT	.5200	UGG	
			BKFANT		3.2	LT	.2200	UGG	
			BZALC		3.2	ND	.3300	UGG	R
			B2CEXM		3.2	ND	.3300	UGG	R
			B2CIPE		3.2	ND	.3300	UGG	R
			B2CLEE		3.2	LT	.3800	UGG	
			B2EHP		3.2		11.0000	UGG	
			CHRY		3.2		14.2000	UGG	
			CLDAN		3.2	LT	.8100	UGG	
			CL6BZ		3.2	LT	.3500	UGG	
			CL6CP		3.2	ND	.3300	UGG	R
			CL6ET		3.2	LT	.1400	UGG	
			DBAHA		3.2	LT	.5700	UGG	
			DBHC		3.2	LT	.5700	UGG	
			DBZFUR		3.2	ND	.3300	UGG	R
			DEP		3.2	ND	.3300	UGG	R
			DLDRN		3.2	LT	.8600	UGG	
			DMP		3.2	ND	.3300	UGG	R
			DNBP		3.2	ND	.3300	UGG	R
			DNOP		3.2	LT	.3500	UGG	
			ENDRN		3.2	LT	.3800	UGG	
			ENDRNK		3.2	ND	1.0000	UGG	R
			ESFSO4		3.2	ND	1.0000	UGG	R
			FANT		3.2		8.1800	UGG	
			FLRENE		3.2		.7900	UGG	S
			HCB		3.2	LT	.2900	UGG	
			HPCL		3.2	LT	.2700	UGG	
			HPCLE		3.2	LT	.7400	UGG	
			ICDPYR		3.2	LT	.4500	UGG	

3T19

ISOPHR	3.2	ND	.3300	UGG	R
LIN	3.2	LT	.3000	UGG	
MEXCLR	3.2	ND	5.0000	UGG	R
NAP	3.2		1.2700	UGG	
NB	3.2	ND	.3300	UGG	R
NNDNPA	3.2	LT	.1100	UGG	
NNDPA	3.2	ND	.3300	UGG	R
PCB016	3.2	ND	5.0000	UGG	R
PCB221	3.2	ND	5.0000	UGG	R
PCB232	3.2	ND	5.0000	UGG	R
PCB242	3.2	ND	5.0000	UGG	R
PCB248	3.2	ND	5.0000	UGG	R
PCB254	3.2	ND	10.0000	UGG	R
PCB260	3.2	ND	10.0000	UGG	R
PCP	3.2	ND	2.0000	UGG	R
PHANTR	3.2	LT	1.6000	UGG	
PHENOL	3.2		3.7300	UGG	S
PPDDD	3.2	LT	.3900	UGG	
PPDDE	3.2	LT	.4000	UGG	
PPDDT	3.2	LT	.4800	UGG	
PYR	3.2		8.0600	UGG	
TXPHEN	3.2	ND	10.0000	UGG	R
UNK537	3.2		12.9000	UGG	
UNK540	3.2		.6020	UGG	
UNK548	3.2		1.8600	UGG	
UNK554	3.2		.6050	UGG	
UNK564	3.2		.0474	UGG	
UNK565	3.2		.1470	UGG	
UNK566	3.2		.0392	UGG	
UNK567	3.2		.1210	UGG	
UNK570	3.2		.0425	UGG	
UNK571	3.2		.2520	UGG	
UNK572	3.2		.0343	UGG	
UNK572	3.2		.0948	UGG	D
UNK574	3.2		.0441	UGG	
UNK575	3.2		2.1700	UGG	
UNK576	3.2		2.3400	UGG	
UNK576	3.2		.5710	UGG	D
UNK577	3.2		1.7700	UGG	
UNK578	3.2		.5150	UGG	
UNK580	3.2		.5580	UGG	
UNK582	3.2		.6540	UGG	
12DCLB	3.2	LT	.3300	UGG	
124TCB	3.2	LT	.1700	UGG	
13DCLB	3.2	LT	.3000	UGG	
14DCLB	3.2	LT	.2900	UGG	
2CLP	3.2	ND	.3300	UGG	R
2CNAP	3.2	LT	.3200	UGG	
2MNAP	3.2		1.1900	UGG	S
2MP	3.2	ND	.3300	UGG	R
2NANIL	3.2	ND	2.0000	UGG	R
2NP	3.2	ND	.3300	UGG	R
24DCLP	3.2	ND	.3300	UGG	R
24DMPN	3.2	ND	.3300	UGG	R
24DNP	3.2	ND	2.0000	UGG	R
24DNT	3.2	LT	.4600	UGG	
245TCP	3.2	ND	2.0000	UGG	R

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246TCP	3.2	ND	.3300	UGG	R
26DNT	3.2	LT	.2000	UGG	
3NANIL	3.2	ND	2.0000	UGG	R
33DCBD	3.2	ND	.7000	UGG	R
4BRPPE	3.2	ND	.3300	UGG	R
4CANIL	3.2	ND	.2800	UGG	R
4CLPPE	3.2	ND	.3300	UGG	R
4CL3C	3.2	ND	.2900	UGG	R
4MP	3.2		10.8000	UGG	S
4NANIL	3.2	ND	2.0000	UGG	R
4NP	3.2	ND	2.0000	UGG	R
46DN2C	3.2	ND	2.0000	UGG	R
ACET	3.2	ND	.0100	UGG	R
BDRCLM	3.2	ND	.0050	UGG	R
CCL4	3.2	LT	.0020	UGG	
CHBR3	3.2	LT	.0039	UGG	
CHCL3	3.2	LT	.0150	UGG	
CH2CL2	3.2	ND	.0500	UGG	R
CH3BR	3.2	ND	.0100	UGG	R
CH3CL	3.2		.0408	UGG	
CLC6H5	3.2	LT	.0020	UGG	
CS2	3.2	ND	.0050	UGG	R
C13DCP	3.2	LT	.0028	UGG	
C2AVE	3.2	ND	.0100	UGG	R
C2H3CL	3.2	LT	.0078	UGG	
C2H5CL	3.2	LT	.0100	UGG	
C6H6	3.2		.1400	UGG	
DBRCLM	3.2	LT	.0023	UGG	
ETC6H5	3.2		.0842	UGG	
MEC6H5	3.2	GT	.1000	UGG	
MEK	3.2		.4900	UGG	S
MIBK	3.2		.0621	UGG	S
MNBK	3.2	ND	.0100	UGG	R
STYR	3.2	ND	.0050	UGG	R
TCLEA	3.2	LT	.0028	UGG	
TCLEE	3.2	LT	.0079	UGG	
TRCLE	3.2	LT	.0020	UGG	
T13DCP	3.2	LT	.0020	UGG	
UNK080	3.2		.3800	UGG	
UNK094	3.2		.1900	UGG	
UNK136	3.2		.0140	UGG	
UNK157	3.2		.0090	UGG	
UNK298	3.2		.0530	UGG	
XYLEN	3.2		.6370	UGG	S
11DCE	3.2	LT	.0120	UGG	
11DCLE	3.2	LT	.0073	UGG	
111TCE	3.2	LT	.0059	UGG	
112TCE	3.2	LT	.0028	UGG	
12DCE	3.2	LT	.0061	UGG	
12DCLE	3.2	LT	.0048	UGG	
12DCLP	3.2	LT	.0100	UGG	
OILGR	3.2		17699.9998	UGG	

LM12

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RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T19
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	HG	JB09	3.2		.6310	UGG	

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T20
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/18/88	ME	CD	SS06	4.0	LT	4.0900	UGL	
			CR		4.0	LT	4.4400	UGL	
			CU		4.0		36.7000	UGL	
			FE		4.0		8100.0000	UGL	
			ZN		4.0		179.0000	UGL	
			ACET	UM12	4.0	ND	10.0000	UGL	R
			BDRCLM		4.0	ND	5.0000	UGL	R
			CCL4		4.0	LT	1.0000	UGL	
			CHBR3		4.0	LT	3.7000	UGL	
			CHCL3		4.0	LT	1.0000	UGL	
			CH2CL2		4.0	LT	23.0000	UGL	
			CH3BR		4.0	ND	10.0000	UGL	R
			CH3CL		4.0	LT	1.8000	UGL	
			CLC6H5		4.0	LT	1.2000	UGL	
			CS2		4.0	ND	5.0000	UGL	R
			C13DCP		4.0	LT	1.8000	UGL	
			C2AVE		4.0	ND	10.0000	UGL	R
			C2H3CL		4.0	LT	13.0000	UGL	
			C2H5CL		4.0	LT	6.9000	UGL	
			C6H6		4.0	LT	1.7000	UGL	
			DBRCLM		4.0	LT	1.8000	UGL	
			ETC6H5		4.0	LT	1.4000	UGL	
			MEC6H5		4.0	LT	1.8000	UGL	
			MEK		4.0	ND	10.0000	UGL	R
			MIBK		4.0	ND	10.0000	UGL	R
			MNBK		4.0	ND	10.0000	UGL	R
			STYR		4.0	ND	5.0000	UGL	R
			TCLEA		4.0	LT	7.1000	UGL	
			TCLEE		4.0	LT	2.3000	UGL	
			TRCLE		4.0	LT	1.0000	UGL	
			T13DCP		4.0	LT	1.6000	UGL	
			UNK274		4.0		18.5000	UGL	
			UNK294		4.0		206.0000	UGL	
			UNK295		4.0		119.0000	UGL	
			UNK330		4.0		11.2000	UGL	
			UNK338		4.0		24.8000	UGL	
			UNK353		4.0		24.9000	UGL	
			UNK374		4.0		730.0000	UGL	
			UNK379		4.0		15.8000	UGL	
			UNK381		4.0		18.7000	UGL	
			UNK383		4.0		18.6000	UGL	
			XYLEN		4.0	ND	5.0000	UGL	R
			11DCE		4.0	LT	6.8000	UGL	
			11DCL		4.0	LT	2.7000	UGL	
			111TCE		4.0	LT	1.0000	UGL	
			112TCE		4.0	LT	1.7000	UGL	

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12DCE	4.0	LT	2.2000	UGL	
12DCLE	4.0	LT	1.0000	UGL	
12DCLP	4.0	LT	3.2000	UGL	
ABHC	4.0	ND	3.0000	UGL	R
AENSLF	4.0	ND	3.0000	UGL	R
ALDRN	4.0	LT	6.3000	UGL	
ANAPNE	4.0	LT	1.3000	UGL	
ANAPYL	4.0	LT	3.7000	UGL	
ANTHRC	4.0	LT	1.1000	UGL	
BAANTR	4.0	LT	.8300	UGL	
BAPYR	4.0	LT	4.5000	UGL	
BBFANT	4.0	LT	2.4000	UGL	
BBHC	4.0	LT	3.2000	UGL	
BBZP	4.0	ND	10.0000	UGL	R
BENSLF	4.0	ND	6.0000	UGL	R
BENZDA	4.0	ND	50.0000	UGL	R
BGHIPY	4.0	LT	38.0000	UGL	
BKFANT	4.0	LT	2.9000	UGL	
BZALC	4.0	ND	.1000	UGL	R
B2CEXM	4.0	ND	10.0000	UGL	R
B2CIPE	4.0	ND	10.0000	UGL	R
B2CLEE	4.0	LT	1.6000	UGL	
B2EHP	4.0	LT	34.0000	UGL	
CHRY	4.0	LT	1.0000	UGL	
CLDAN	4.0	LT	12.0000	UGL	
CL6BZ	4.0	LT	2.8000	UGL	
CL6CP	4.0	ND	10.0000	UGL	R
CL6ET	4.0	LT	8.2000	UGL	
DBAHA	4.0	LT	4.9000	UGL	
DBHC	4.0	LT	95.0000	UGL	
DBZFUR	4.0		225.0000	UGL	S
DEP	4.0	ND	10.0000	UGL	R
DLDRN	4.0	LT	3.5000	UGL	
DMP	4.0	ND	10.0000	UGL	R
DNBP	4.0	ND	10.0000	UGL	R
DNOP	4.0	LT	18.0000	UGL	
ENDRN	4.0	LT	51.0000	UGL	
ENDRNK	4.0	ND	6.0000	UGL	R
ESFS04	4.0	ND	6.0000	UGL	R
FANT	4.0	LT	1.2000	UGL	
FLRENE	4.0	ND	10.0000	UGL	R
HCB0	4.0	LT	6.0000	UGL	
HPCL	4.0	LT	5.3000	UGL	
HPCLE	4.0	LT	6.7000	UGL	
ICDPYR	4.0	LT	86.0000	UGL	
ISOPHR	4.0	ND	.1000	UGL	R
LIN	4.0	LT	15.0000	UGL	
MEXCLR	4.0	ND	30.0000	UGL	R
NAP	4.0	LT	4.0000	UGL	
NB	4.0	ND	10.0000	UGL	R
NNDNPA	4.0	LT	6.7000	UGL	
NNDPA	4.0		114.0000	UGL	S
PCB016	4.0	ND	30.0000	UGL	R
PCB221	4.0	ND	30.0000	UGL	R
PCB232	4.0	ND	30.0000	UGL	R
PCB242	4.0	ND	30.0000	UGL	R
PCB248	4.0	ND	30.0000	UGL	R

UM13

3T20

PCB254	4.0	ND	60.0000	UGL	R
PCB260	4.0	ND	60.0000	UGL	R
PCP	4.0	ND	50.0000	UGL	R
PHANTR	4.0	LT	.8500	UGL	
PHENOL	4.0	ND	10.0000	UGL	R
PPDDD	4.0	LT	6.0000	UGL	
PPDDE	4.0	LT	12.0000	UGL	
PPDDT	4.0	LT	4.7000	UGL	
PYR	4.0	LT	12.0000	UGL	
TXPHEN	4.0	ND	60.0000	UGL	R
UNK557	4.0		525.0000	UGL	
UNK561	4.0		32.8000	UGL	
UNK561	4.0		16.6000	UGL	D
UNK562	4.0		30.7000	UGL	
UNK564	4.0		36.1000	UGL	
UNK564	4.0		17.1000	UGL	D
UNK568	4.0		19.2000	UGL	D
UNK568	4.0		45.2000	UGL	
UNK569	4.0		60.0000	UGL	D
UNK569	4.0		35.0000	UGL	
UNK570	4.0		52.0000	UGL	
UNK572	4.0		14.9000	UGL	
UNK574	4.0		16.5000	UGL	D
UNK574	4.0		23.4000	UGL	
UNK575	4.0		87.0000	UGL	
UNK577	4.0		132.0000	UGL	
UNK579	4.0		43.3000	UGL	
UNK580	4.0		82.5000	UGL	
UNK581	4.0		48.4000	UGL	
UNK583	4.0		40.0000	UGL	
12DCLB	4.0	LT	5.2000	UGL	
124TCB	4.0	LT	4.6000	UGL	
13DCLB	4.0	LT	5.5000	UGL	
14DCLB	4.0	LT	6.0000	UGL	
2CLP	4.0	ND	10.0000	UGL	R
2CNAP	4.0	LT	1.7000	UGL	
2MNAP	4.0		745.0000	UGL	S
2MP	4.0	ND	10.0000	UGL	R
2NANIL	4.0	ND	50.0000	UGL	R
2NP	4.0	ND	50.0000	UGL	R
24DCLP	4.0	ND	10.0000	UGL	R
24DMPN	4.0	ND	10.0000	UGL	R
24DNP	4.0	ND	50.0000	UGL	R
24DNT	4.0	LT	5.4000	UGL	
245TCP	4.0	ND	50.0000	UGL	R
246TCP	4.0	ND	10.0000	UGL	R
26DNT	4.0	LT	5.1000	UGL	
3NANIL	4.0	ND	50.0000	UGL	R
33DCBD	4.0	ND	20.0000	UGL	R
4BRPPE	4.0	ND	10.0000	UGL	R
4CANIL	4.0	ND	10.0000	UGL	R
4CLPPE	4.0	ND	10.0000	UGL	R
4CL3C	4.0	ND	10.0000	UGL	R
4MP	4.0	ND	10.0000	UGL	R
4NANIL	4.0	ND	50.0000	UGL	R
4NP	4.0	ND	50.0000	UGL	R
46DN2C	4.0	ND	50.0000	UGL	R

3T20

OILGR 00

4.0

17300000.0000 UGL

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T20
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
-----	-----	---	-----	----	-----	----	-----	----	----
C	08/18/88	ME	AS	SD11	4.0	LT	2.9200	UGL	
			PB		4.0		9.6100	UGL	

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T21
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/18/88	ME	CD	SS06	4.0		306.0000	UGL	
			CR		4.0	LT	4.4400	UGL	
			CU		4.0		4699.9999	UGL	
			FE		4.0		5199.9999	UGL	
			ZN		4.0		3000.0000	UGL	
			ACET	UM12	4.0	ND	10.0000	UGL	R
			BDRCLM		4.0	ND	5.0000	UGL	R
			CCL4		4.0	LT	1.0000	UGL	
			CHBR3		4.0	LT	3.7000	UGL	
			CHCL3		4.0	LT	1.0000	UGL	
			CH2CL2		4.0	LT	23.0000	UGL	
			CH3BR		4.0	ND	10.0000	UGL	R
			CH3CL		4.0		3.6000	UGL	
			CLC6H5		4.0	LT	1.2000	UGL	
			CS2		4.0	ND	5.0000	UGL	R
			C13DCP		4.0	LT	1.8000	UGL	
			C2AVE		4.0	ND	10.0000	UGL	R
			C2H3CL		4.0	LT	13.0000	UGL	
			C2H5CL		4.0	LT	6.9000	UGL	
			C6H6		4.0	LT	1.7000	UGL	
			DBRCLM		4.0	LT	1.8000	UGL	
			ETC6H5		4.0		24.1000	UGL	
			MEC6H5		4.0	LT	1.8000	UGL	
			MEK		4.0	ND	10.0000	UGL	R
			MIBK		4.0	ND	10.0000	UGL	R
			MNBK		4.0	ND	10.0000	UGL	R
			STYR		4.0	ND	5.0000	UGL	R
			TCLEA		4.0	LT	7.1000	UGL	
			TCLEE		4.0	LT	2.3000	UGL	
			TRCLE		4.0	LT	1.0000	UGL	
			T13DCP		4.0	LT	1.6000	UGL	
			UNK237		4.0		129.0000	UGL	
			UNK255		4.0		104.0000	UGL	
			UNK256		4.0		40.1000	UGL	
			UNK288		4.0		97.9000	UGL	
			UNK297		4.0		55.1000	UGL	
			UNK298		4.0		64.5000	UGL	
			UNK300		4.0		39.8000	UGL	
			UNK301		4.0		62.4000	UGL	
			UNK328		4.0		42.1000	UGL	
			UNK373		4.0		75.6000	UGL	
			XYLEN		4.0		45.0000	UGL	S
			11DCE		4.0	LT	6.8000	UGL	
			11DCLE		4.0	LT	2.7000	UGL	
			111TCE		4.0	LT	1.0000	UGL	
			112TCE		4.0	LT	1.7000	UGL	

3T21

12DCE	4.0		8.4500	UGL	
12DCLE	4.0	LT	1.0000	UGL	
12DCLP	4.0	LT	3.2000	UGL	
ABHC	4.0	ND	10.0000	UGL	R
AEENSLF	4.0	ND	10.0000	UGL	R
ALDRN	4.0	LT	6.3000	UGL	
ANAPNE	4.0	LT	1.3000	UGL	
ANAPYL	4.0	LT	3.7000	UGL	
ANTHRC	4.0	LT	1.1000	UGL	
BAANTR	4.0	LT	.8300	UGL	
BAPYR	4.0	LT	4.5000	UGL	
BBFANT	4.0	LT	2.4000	UGL	
BBHC	4.0	LT	3.2000	UGL	
BBZP	4.0	ND	10.0000	UGL	R
BENSLF	4.0	ND	10.0000	UGL	R
BENZOA	4.0	ND	50.0000	UGL	R
BGHIPY	4.0	LT	38.0000	UGL	
BKFANT	4.0	LT	2.9000	UGL	
BZALC	4.0	ND	.1000	UGL	R
B2CEXM	4.0	ND	10.0000	UGL	R
B2CIPE	4.0	ND	10.0000	UGL	R
B2CLEE	4.0	LT	1.6000	UGL	
B2EHP	4.0	LT	34.0000	UGL	
CHRY	4.0	LT	1.0000	UGL	
CLDAN	4.0	LT	12.0000	UGL	
CL6BZ	4.0	LT	2.8000	UGL	
CL6CP	4.0	ND	10.0000	UGL	R
CL6ET	4.0	LT	8.2000	UGL	
DBAHA	4.0	LT	4.9000	UGL	
DBHC	4.0	LT	95.0000	UGL	
DBZFUR	4.0	ND	10.0000	UGL	R
DEP	4.0	ND	10.0000	UGL	R
DLDRN	4.0	LT	3.5000	UGL	
DMP	4.0	ND	10.0000	UGL	R
DNBP	4.0	ND	10.0000	UGL	R
DNOP	4.0	LT	18.0000	UGL	
ENDRN	4.0	LT	51.0000	UGL	
ENDRNK	4.0	ND	10.0000	UGL	R
ESFS04	4.0	ND	10.0000	UGL	R
FANT	4.0	LT	1.2000	UGL	
FLRENE	4.0		9.3900	UGL	S
HCBP	4.0	LT	6.0000	UGL	
HPCL	4.0	LT	5.3000	UGL	
HPCLE	4.0	LT	6.7000	UGL	
ICDPYR	4.0	LT	86.0000	UGL	
ISOPHR	4.0	ND	.1000	UGL	R
LIN	4.0	LT	15.0000	UGL	
MEXCLR	4.0	ND	50.0000	UGL	R
NAP	4.0		376.0000	UGL	
NB	4.0	ND	10.0000	UGL	R
NNDNPA	4.0	LT	6.7000	UGL	
NNDPA	4.0		9.6200	UGL	S
PCB016	4.0	ND	50.0000	UGL	R
PCB221	4.0	ND	50.0000	UGL	R
PCB232	4.0	ND	50.0000	UGL	R
PCB242	4.0	ND	50.0000	UGL	R
PCB248	4.0	ND	50.0000	UGL	R

UM13

3T21

PCB254	4.0	ND	50.0000	UGL	R
PCB260	4.0	ND	50.0000	UGL	R
PCP	4.0	ND	50.0000	UGL	R
PHANTR	4.0	LT	.8500	UGL	
PHENOL	4.0	ND	10.0000	UGL	R
PPDDD	4.0	LT	6.0000	UGL	
PPDDE	4.0	LT	12.0000	UGL	
PPDDT	4.0	LT	4.7000	UGL	
PYR	4.0	LT	12.0000	UGL	
TXPHEN	4.0	ND	50.0000	UGL	R
UNK542	4.0		21.9000	UGL	
UNK544	4.0		13.0000	UGL	
UNK545	4.0		13.5000	UGL	
UNK546	4.0		15.3000	UGL	
UNK547	4.0		18.5000	UGL	
UNK547	4.0		26.1000	UGL	D
UNK548	4.0		18.1000	UGL	D
UNK548	4.0		39.3000	UGL	
UNK549	4.0		37.9000	UGL	
UNK551	4.0		32.6000	UGL	
UNK553	4.0		39.1000	UGL	
UNK554	4.0		14.2000	UGL	
UNK558	4.0		24.1000	UGL	
UNK561	4.0		20.7000	UGL	
UNK575	4.0		166.0000	UGL	
UNK576	4.0		151.0000	UGL	
UNK580	4.0		106.0000	UGL	
UNK582	4.0		104.0000	UGL	
UNK586	4.0		51.2000	UGL	
UNK587	4.0		143.0000	UGL	
12DCLB	4.0	LT	5.2000	UGL	
124TCB	4.0	LT	4.6000	UGL	
13DCLB	4.0	LT	5.5000	UGL	
14DCLB	4.0	LT	6.0000	UGL	
2CLP	4.0	ND	10.0000	UGL	R
2CNAP	4.0	LT	1.7000	UGL	
2MNAP	4.0		1320.0000	UGL	S
2MP	4.0	ND	10.0000	UGL	R
2NANIL	4.0	ND	50.0000	UGL	R
2NP	4.0	ND	50.0000	UGL	R
24DCLP	4.0	ND	10.0000	UGL	R
24DMPN	4.0	ND	10.0000	UGL	R
24DNP	4.0	ND	50.0000	UGL	R
24DNT	4.0	LT	5.4000	UGL	
245TCP	4.0	ND	50.0000	UGL	R
246TCP	4.0	ND	10.0000	UGL	R
26DNT	4.0	LT	5.1000	UGL	
3NANIL	4.0	ND	50.0000	UGL	R
33DCBD	4.0	ND	20.0000	UGL	R
4BRPPE	4.0	ND	10.0000	UGL	R
4CANIL	4.0	ND	10.0000	UGL	R
4CLPPE	4.0	ND	10.0000	UGL	R
4CL3C	4.0	ND	10.0000	UGL	R
4MP	4.0	ND	10.0000	UGL	R
4NANIL	4.0	ND	50.0000	UGL	R
4NP	4.0	ND	50.0000	UGL	R
46DN2C	4.0	ND	50.0000	UGL	R

3T21

OILGR

00

4.0

20900.0000 UGL

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T21
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
-----	-----	---	-----	----	-----	----	-----	-----	---
C	08/18/88	ME	AS	SD11	4.0	LT	2.9200	UGL	
			PB		4.0		630.0000	UGL	

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RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T22
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/18/88	ME	AS	SD11	4.0	LT	2.9200	UGL	
			PB		4.0		21.0000	UGL	
			ABHC	UM13	4.0	ND	10.0000	UGL	R
			AENSLF		4.0	ND	10.0000	UGL	R
			ALDRN		4.0	LT	6.3000	UGL	
			ANAPNE		4.0	LT	1.3000	UGL	
			ANAPYL		4.0	LT	3.7000	UGL	
			ANTHRC		4.0	LT	1.1000	UGL	
			BAASTR		4.0	LT	.8300	UGL	
			BAPYR		4.0	LT	4.5000	UGL	
			BBFANT		4.0	LT	2.4000	UGL	
			BBHC		4.0	LT	3.2000	UGL	
			BBZP		4.0	ND	10.0000	UGL	R
			BENSLF		4.0	ND	10.0000	UGL	R
			BENZOA		4.0	ND	50.0000	UGL	R
			BGHIPY		4.0	LT	38.0000	UGL	
			BKFANT		4.0	LT	2.9000	UGL	
			BZALC		4.0	ND	.1000	UGL	R
			B2CEXM		4.0	ND	10.0000	UGL	R
			B2CIPE		4.0	ND	10.0000	UGL	R
			B2CLEE		4.0	LT	1.6000	UGL	
			B2EHP		4.0	LT	34.0000	UGL	
			CHRY		4.0	LT	1.0000	UGL	
			CLDAN		4.0	LT	12.0000	UGL	
			CL6BZ		4.0	LT	2.8000	UGL	
			CL6CP		4.0	ND	10.0000	UGL	R
			CL6ET		4.0	LT	8.2000	UGL	
			DBAHA		4.0	LT	4.9000	UGL	
			DBHC		4.0	LT	95.0000	UGL	
			DBZFUR		4.0	ND	10.0000	UGL	R
			DEP		4.0	ND	10.0000	UGL	R
			DLDRN		4.0	LT	3.5000	UGL	
			DMP		4.0	ND	10.0000	UGL	R
			DNBP		4.0	ND	10.0000	UGL	R
			DNOP		4.0	LT	18.0000	UGL	
			ENDRN		4.0	LT	51.0000	UGL	
			ENDRNK		4.0	ND	10.0000	UGL	R
			ESFSO4		4.0	ND	10.0000	UGL	R
			FANT		4.0	LT	1.2000	UGL	
			FLRENE		4.0		28300.0000	UGL	S
			HCB		4.0	LT	6.0000	UGL	
			HPCL		4.0	LT	5.3000	UGL	
			HPCLE		4.0	LT	6.7000	UGL	
			ICDPYR		4.0	LT	86.0000	UGL	
			ISOPHR		4.0	ND	.1000	UGL	R
			LIN		4.0	LT	15.0000	UGL	

3T22

MEXCLR	4.0	ND	50.0000	UGL	R
NAP	4.0	LT	4.0000	UGL	
NB	4.0	ND	10.0000	UGL	R
NNDNPA	4.0	LT	6.7000	UGL	
NNDPA	4.0		315.0000	UGL	S
PCB016	4.0	ND	50.0000	UGL	R
PCB221	4.0	ND	50.0000	UGL	R
PCB232	4.0	ND	50.0000	UGL	R
PCB242	4.0	ND	50.0000	UGL	R
PCB248	4.0	ND	50.0000	UGL	R
PCB254	4.0	ND	50.0000	UGL	R
PCB260	4.0	ND	50.0000	UGL	R
PCP	4.0	ND	50.0000	UGL	R
PHANTR	4.0	LT	.8500	UGL	
PHENOL	4.0	ND	10.0000	UGL	R
PPDDD	4.0	LT	6.0000	UGL	
PPDDE	4.0	LT	12.0000	UGL	
PPDDT	4.0	LT	4.7000	UGL	
PYR	4.0	LT	12.0000	UGL	
TXPHEN	4.0	ND	50.0000	UGL	R
UNK542	4.0		47.7000	UGL	
UNK543	4.0		61.0000	UGL	
UNK547	4.0		62.5000	UGL	D
UNK547	4.0		36.2000	UGL	
UNK548	4.0		32.8000	UGL	
UNK549	4.0		49.3000	UGL	
UNK550	4.0		2310.0000	UGL	
UNK551	4.0		49.9000	UGL	
UNK553	4.0		35.9000	UGL	
UNK553	4.0		38.2000	UGL	D
UNK554	4.0		31.6000	UGL	
UNK554	4.0		40.2000	UGL	D
UNK555	4.0		56.0000	UGL	
UNK558	4.0		36.3000	UGL	
UNK559	4.0		30.3000	UGL	
UNK571	4.0		26.8000	UGL	
UNK575	4.0		187.0000	UGL	
UNK576	4.0		181.0000	UGL	
UNK580	4.0		126.0000	UGL	
UNK587	4.0		209.0000	UGL	
12DCLB	4.0	LT	5.2000	UGL	
124TCB	4.0	LT	4.6000	UGL	
13DCLB	4.0	LT	5.5000	UGL	
14DCLB	4.0	LT	6.0000	UGL	
2CLP	4.0	ND	10.0000	UGL	R
2CNAP	4.0	LT	1.7000	UGL	
2MNAP	4.0		7899.9999	UGL	S
2MP	4.0	ND	10.0000	UGL	R
2NANIL	4.0	ND	50.0000	UGL	R
2NP	4.0	ND	50.0000	UGL	R
24DCLP	4.0	ND	10.0000	UGL	R
24DMPN	4.0	ND	10.0000	UGL	R
24DNP	4.0	ND	50.0000	UGL	R
24DNT	4.0	LT	5.4000	UGL	
245TCP	4.0	ND	50.0000	UGL	R
246TCP	4.0	ND	10.0000	UGL	R
26DNT	4.0	LT	5.1000	UGL	

3T22

3NANIL	4.0	ND	50.0000	UGL	R
33DCBD	4.0	ND	20.0000	UGL	R
4BRPPE	4.0	ND	10.0000	UGL	R
4CANIL	4.0	ND	10.0000	UGL	R
4CLPPE	4.0	ND	10.0000	UGL	R
4CL3C	4.0	ND	10.0000	UGL	R
4MP	4.0	ND	10.0000	UGL	R
4NANIL	4.0	ND	50.0000	UGL	R
4NP	4.0	ND	50.0000	UGL	R
46DN2C	4.0	ND	50.0000	UGL	R

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSW ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : 3T22
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/18/88	ME	CD	SS06	4.0	LT	4.0900	UGL	
			CR		4.0	LT	4.4400	UGL	
			ZN		4.0		65.9000	UGL	
			ACET	UM12	4.0	ND	10.0000	UGL	R
			BDRCLM		4.0	ND	5.0000	UGL	R
			CCL4		4.0	LT	1.0000	UGL	
			CHBR3		4.0	LT	3.7000	UGL	
			CHCL3		4.0	LT	1.0000	UGL	
			CH2CL2		4.0	LT	23.0000	UGL	
			CH3BR		4.0	ND	10.0000	UGL	R
			CH3CL		4.0	LT	1.8000	UGL	
			CLC6H5		4.0	LT	1.2000	UGL	
			CS2		4.0	ND	5.0000	UGL	R
			C13DCP		4.0	LT	1.8000	UGL	
			C2AVE		4.0	ND	10.0000	UGL	R
			C2H3CL		4.0	LT	13.0000	UGL	
			C2H5CL		4.0	LT	6.9000	UGL	
			C6H6		4.0	LT	1.7000	UGL	
			DBRCLM		4.0	LT	1.8000	UGL	
			ETC6H5		4.0	LT	1.4000	UGL	
			MEC6H5		4.0	LT	1.8000	UGL	
			MEK		4.0	ND	10.0000	UGL	R
			MIBK		4.0	ND	10.0000	UGL	R
			MNBK		4.0	ND	10.0000	UGL	R
			STYR		4.0	ND	5.0000	UGL	R
			TCLEA		4.0	LT	7.1000	UGL	
			TCLEE		4.0	LT	2.3000	UGL	
			TRCLE		4.0	LT	1.0000	UGL	
			T13DCP		4.0	LT	1.6000	UGL	
			UNK198		4.0		954999.9922	UGL	
			UNK200		4.0		10799999.8750	UGL	
			UNK257		4.0		10000000.0000	UGL	
			UNK288		4.0		1840000.0000	UGL	
			UNK291		4.0		1790000.0000	UGL	
			UNK294		4.0		1340000.0000	UGL	
			UNK364		4.0		2800000.0000	UGL	
			UNK370		4.0		1219999.9844	UGL	
			UNK378		4.0		16200000.0000	UGL	
			UNK380		4.0		2120000.0000	UGL	
			XYLEN		4.0	ND	5.0000	UGL	R
			11DCE		4.0	LT	6.8000	UGL	
			11DCLE		4.0	LT	2.7000	UGL	
			111TCE		4.0	LT	1.0000	UGL	
			112TCE		4.0	LT	1.7000	UGL	
			12DCE		4.0	LT	2.2000	UGL	
			12DCLE		4.0	LT	1.0000	UGL	

3T22

12DCLP
OILGR 00

4.0
4.0

LT

3.2000 UGL
388999.9961 UGL

C-193

RUN DATE: 03 APR 89

INSTALLATION RESTORATION PROGRAM
BAYONNE OCEAN MARINE TERMINAL
CSR ANALYTICAL RESULTS
SITE TYPE : TANK
SITE ID : TRIPBLK
DESCRIPTION :

SAMPLE PROG	SAMPLE DATE	LAB	NAME	METH NUMB	SAMPLE DEPTH(FT)	MEAS BOOL	CONCENTRATION	UNITS MEAS	INT STD
C	08/17/88	ME	ACET	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	ACET	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	BDRCLM	UM12	.0	ND	5.0000	UGL	R
C	08/18/88	ME	BDRCLM	UM12	.0	ND	5.0000	UGL	R
C	08/17/88	ME	CCL4	UM12	.0	LT	1.0000	UGL	
C	08/18/88	ME	CCL4	UM12	.0	LT	1.0000	UGL	
C	08/17/88	ME	CHBR3	UM12	.0	LT	3.7000	UGL	
C	08/18/88	ME	CHBR3	UM12	.0	LT	3.7000	UGL	
C	08/17/88	ME	CHCL3	UM12	.0	LT	1.0000	UGL	
C	08/18/88	ME	CHCL3	UM12	.0	LT	1.0000	UGL	
C	08/17/88	ME	CH2CL2	UM12	.0	LT	23.0000	UGL	
C	08/18/88	ME	CH2CL2	UM12	.0	LT	23.0000	UGL	
C	08/17/88	ME	CH3BR	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	CH3BR	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	CH3CL	UM12	.0	LT	1.8000	UGL	
C	08/18/88	ME	CH3CL	UM12	.0	LT	1.8000	UGL	
C	08/17/88	ME	CLC6H5	UM12	.0	LT	1.2000	UGL	
C	08/18/88	ME	CLC6H5	UM12	.0	LT	1.2000	UGL	
C	08/17/88	ME	CS2	UM12	.0	ND	5.0000	UGL	R
C	08/18/88	ME	CS2	UM12	.0	ND	5.0000	UGL	R
C	08/17/88	ME	C13DCP	UM12	.0	LT	1.8000	UGL	
C	08/18/88	ME	C13DCP	UM12	.0	LT	1.8000	UGL	
C	08/17/88	ME	C2AVE	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	C2AVE	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	C2H3CL	UM12	.0	LT	13.0000	UGL	
C	08/18/88	ME	C2H3CL	UM12	.0	LT	13.0000	UGL	
C	08/17/88	ME	C2H5CL	UM12	.0	LT	6.9000	UGL	
C	08/18/88	ME	C2H5CL	UM12	.0	LT	6.9000	UGL	
C	08/17/88	ME	C6H6	UM12	.0	LT	1.7000	UGL	
C	08/18/88	ME	C6H6	UM12	.0	LT	1.7000	UGL	
C	08/17/88	ME	DBRCLM	UM12	.0	LT	1.8000	UGL	
C	08/18/88	ME	DBRCLM	UM12	.0	LT	1.8000	UGL	
C	08/17/88	ME	ETC6H5	UM12	.0	LT	1.4000	UGL	
C	08/18/88	ME	ETC6H5	UM12	.0	LT	1.4000	UGL	
C	08/17/88	ME	MEC6H5	UM12	.0	LT	1.8000	UGL	
C	08/18/88	ME	MEC6H5	UM12	.0	LT	1.8000	UGL	
C	08/17/88	ME	MEK	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	MEK	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	MIBK	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	MIBK	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	MNBK	UM12	.0	ND	10.0000	UGL	R
C	08/18/88	ME	MNBK	UM12	.0	ND	10.0000	UGL	R
C	08/17/88	ME	STYR	UM12	.0	ND	5.0000	UGL	R
C	08/18/88	ME	STYR	UM12	.0	ND	5.0000	UGL	R
C	08/17/88	ME	TCLEA	UM12	.0	LT	7.1000	UGL	
C	08/18/88	ME	TCLEA	UM12	.0	LT	7.1000	UGL	

TRIPBLANK

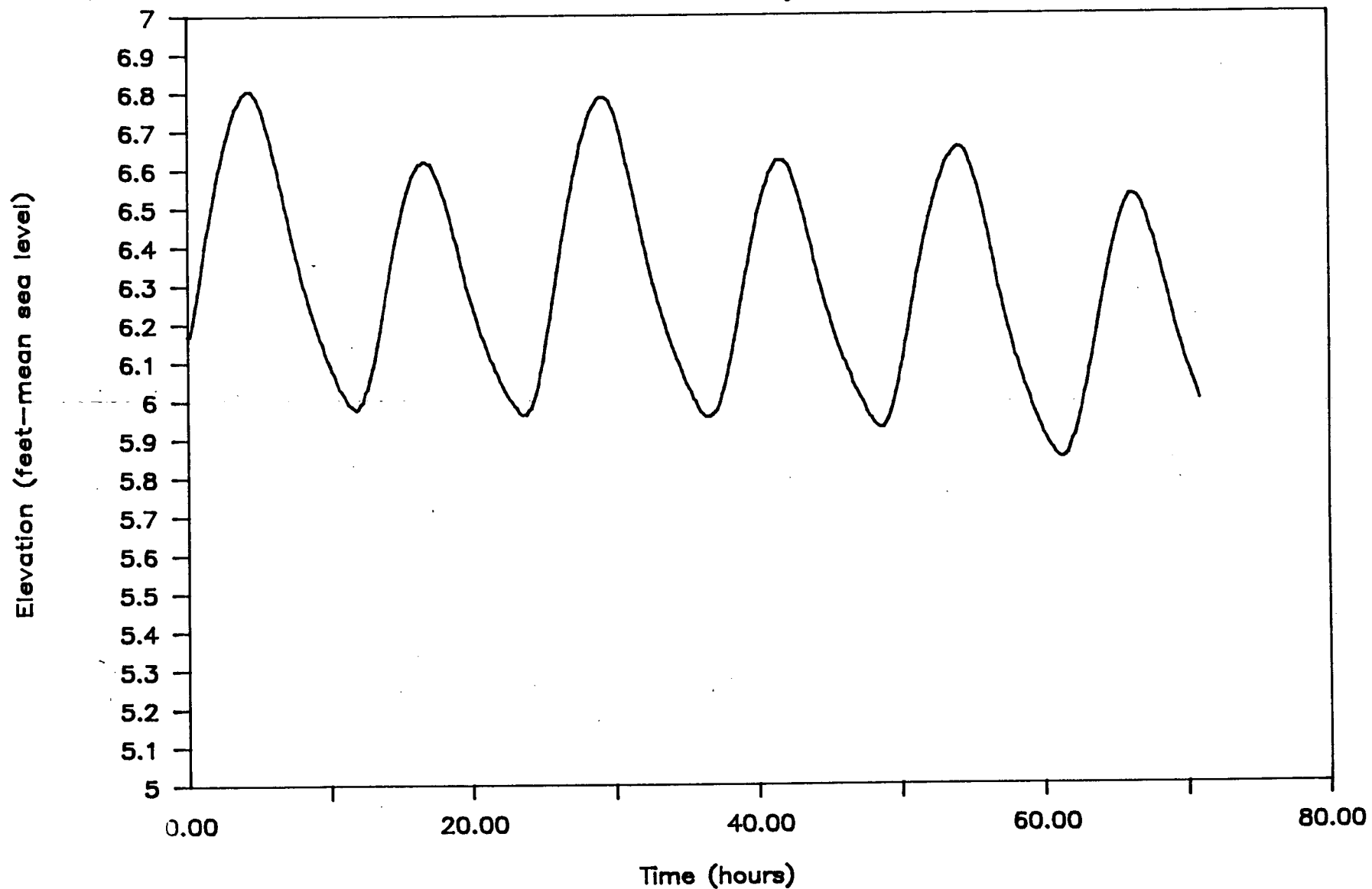
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C	08/17/88	ME	TRCLE	UM12	.0	LT	1.0000	UGL
C	08/18/88	ME	TRCLE	UM12	.0	LT	1.0000	UGL
C	08/17/88	ME	T13DCP	UM12	.0	LT	1.6000	UGL
C	08/18/88	ME	T13DCP	UM12	.0	LT	1.6000	UGL
C	08/17/88	ME	UNK086	UM12	.0		10.5000	UGL
C	08/18/88	ME	UNK213	UM12	.0		127.0000	UGL
			UNK214		.0		33.6000	UGL
			UNK215		.0		66.0000	UGL
			UNK233		.0		15.1000	UGL
			UNK235		.0		15.9000	UGL
C	08/17/88	ME	UNK292	UM12	.0		56.6000	UGL
			UNK293		.0		20.5000	UGL
			UNK295		.0		19.9000	UGL
C	08/18/88	ME	UNK303	UM12	.0		17.8000	UGL
C	08/17/88	ME	UNK312	UM12	.0		25.9000	UGL
			UNK313		.0		22.4000	UGL
			UNK314		.0		60.9000	UGL
			UNK322		.0		5.0000	UGL
C	08/18/88	ME	UNK335	UM12	.0		22.8000	UGL
			UNK340		.0		18.8000	UGL
			UNK342		.0		15.3000	UGL
			UNK344		.0		17.4000	UGL
C	08/17/88	ME	UNK368	UM12	.0		12.1000	UGL
			UNK381		.0		961.0000	UGL
			XYLEN		.0	ND	5.0000	UGL
C	08/18/88	ME	XYLEN	UM12	.0	ND	5.0000	UGL
C	08/17/88	ME	11DCE	UM12	.0	LT	6.8000	UGL
C	08/18/88	ME	11DCE	UM12	.0	LT	6.8000	UGL
C	08/17/88	ME	11DCLE	UM12	.0	LT	2.7000	UGL
C	08/18/88	ME	11DCLE	UM12	.0	LT	2.7000	UGL
C	08/17/88	ME	111TCE	UM12	.0	LT	1.0000	UGL
C	08/18/88	ME	111TCE	UM12	.0	LT	1.0000	UGL
C	08/17/88	ME	112TCE	UM12	.0	LT	1.7000	UGL
C	08/18/88	ME	112TCE	UM12	.0	LT	1.7000	UGL
C	08/17/88	ME	12DCE	UM12	.0	LT	2.2000	UGL
C	08/18/88	ME	12DCE	UM12	.0	LT	2.2000	UGL
C	08/17/88	ME	12DCLE	UM12	.0	LT	1.0000	UGL
C	08/18/88	ME	12DCLE	UM12	.0	LT	1.0000	UGL
C	08/17/88	ME	12DCLP	UM12	.0	LT	3.2000	UGL
C	08/18/88	ME	12DCLP	UM12	.0	LT	3.2000	UGL

R
R

APPENDIX D
Aquifer Characterization Data

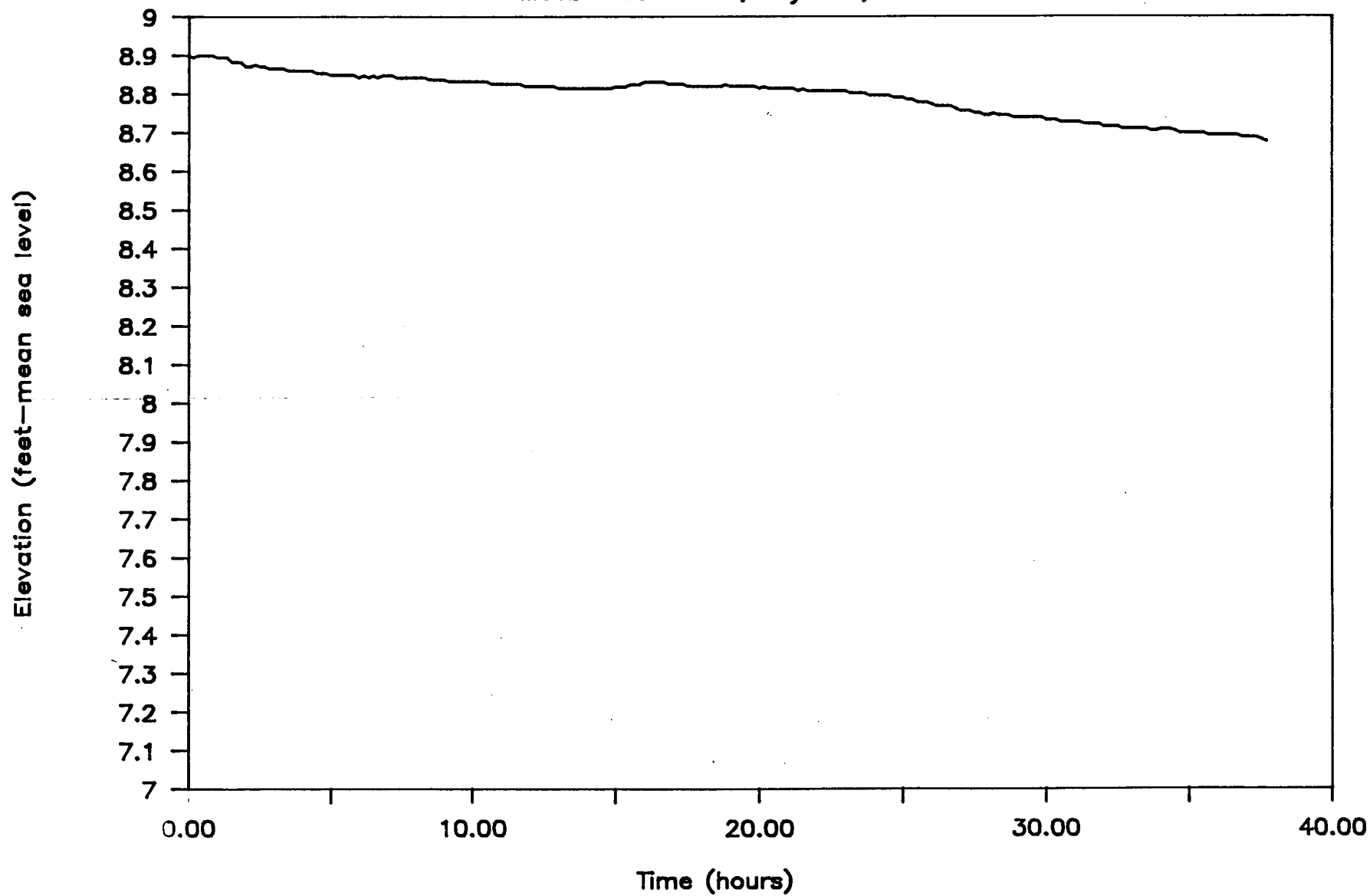
Tidal Fluctuations in Well DM-2

MOTBY-USATHAMA, Bayonne, NJ

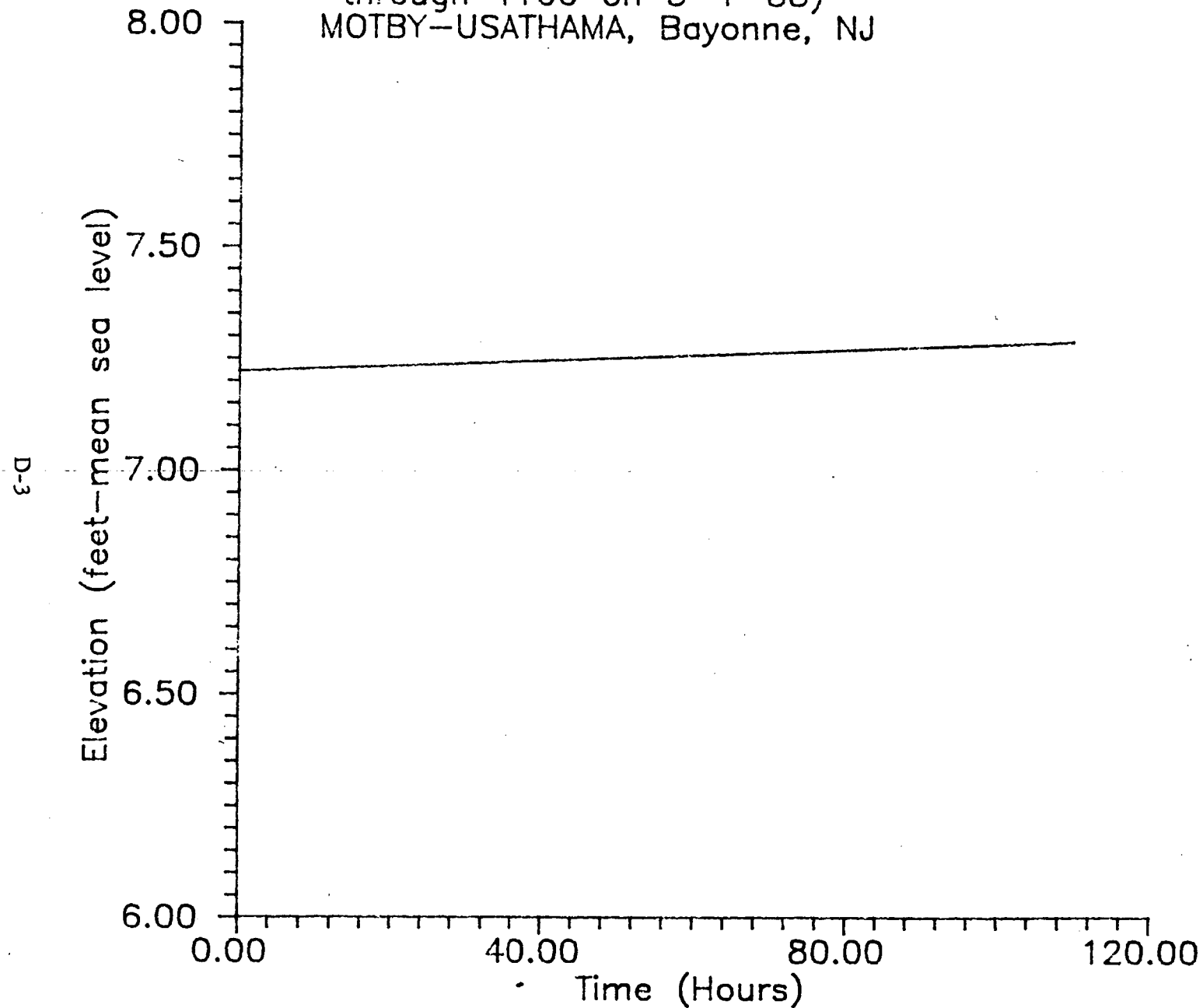


Tidal Fluctuations in Well DM-6

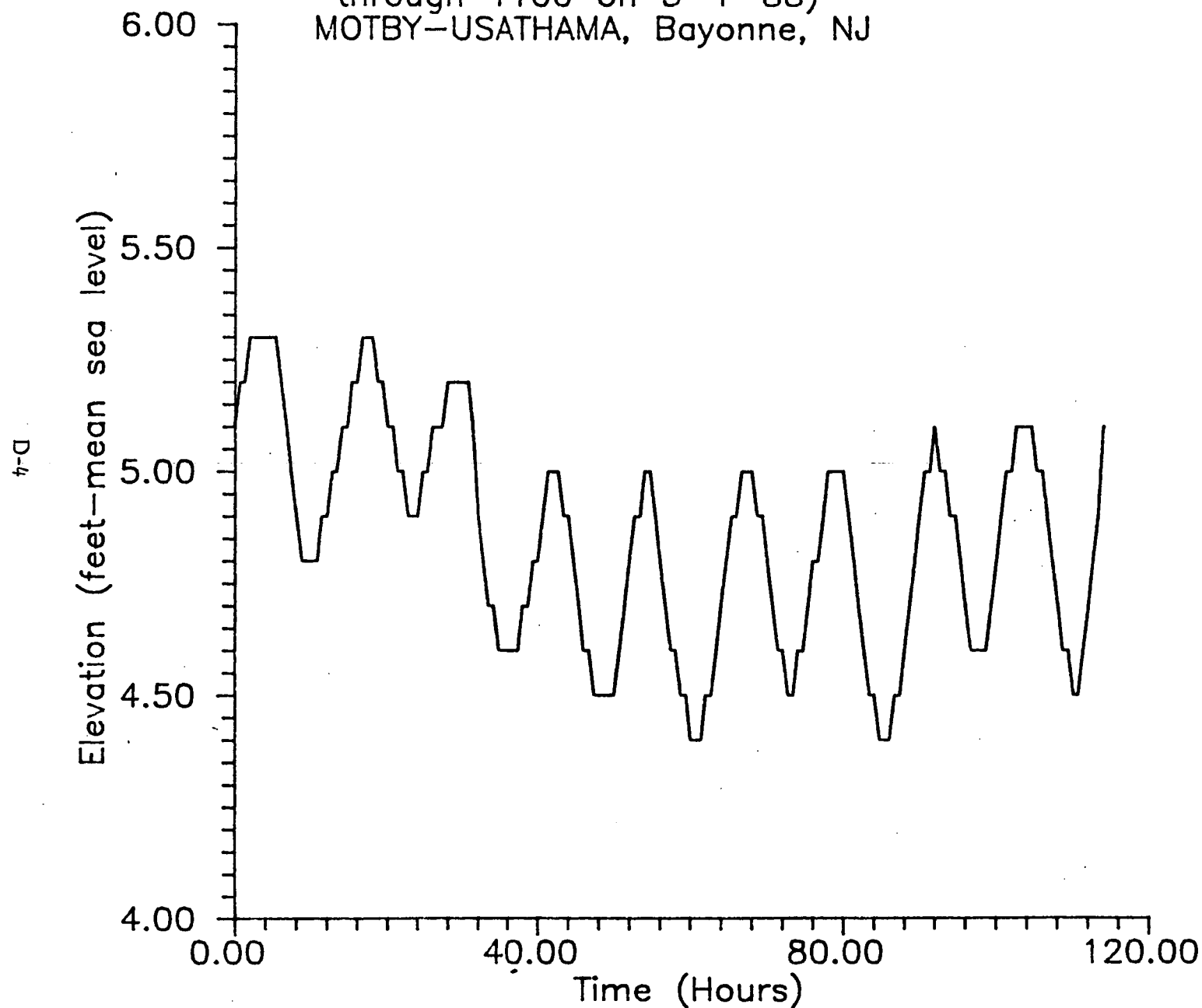
MOTBY-USATHAMA, Bayonne, NJ



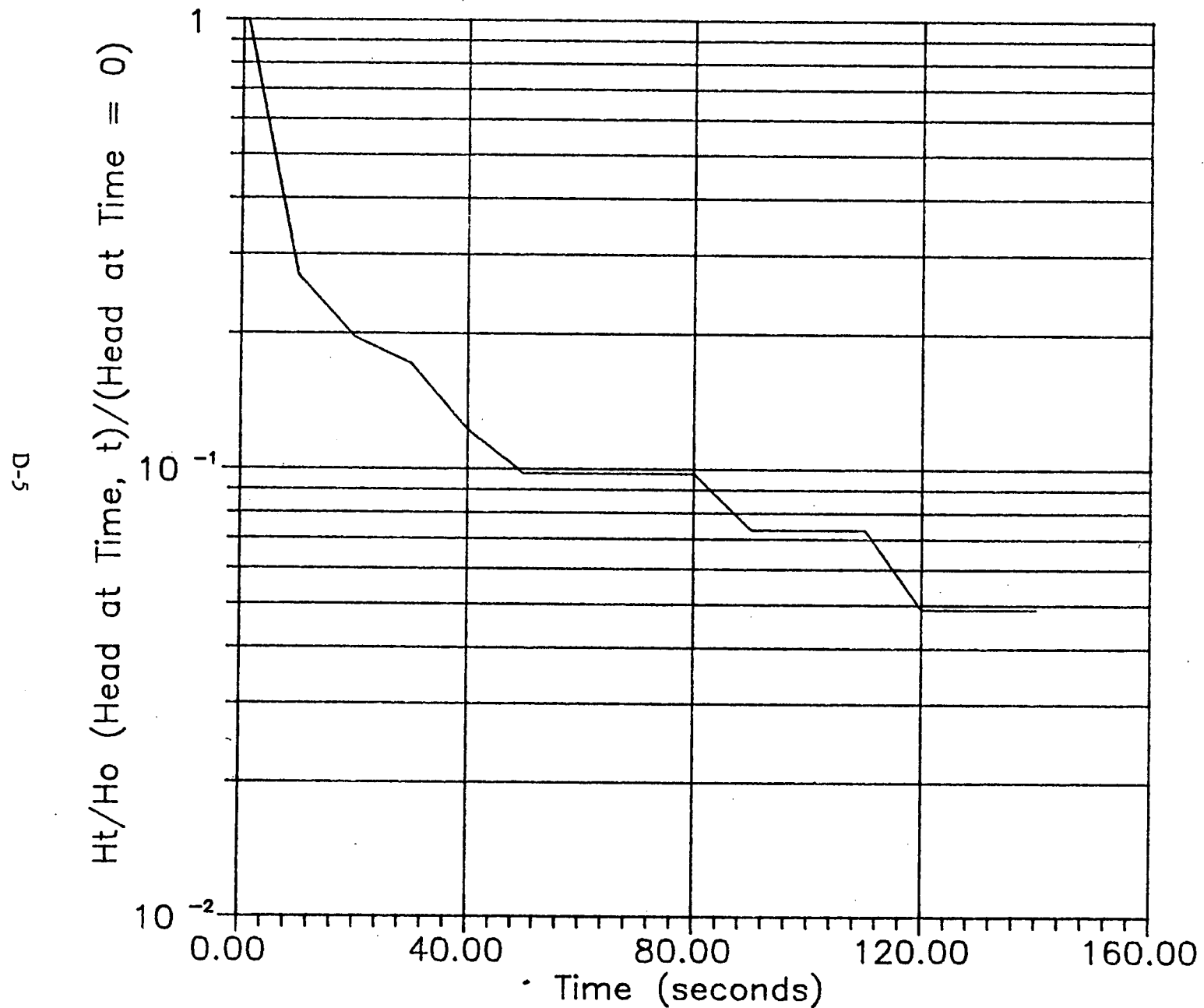
Tidal Fluctuations in Well DM-10
(as measured from 1715 on 2-25-88
through 1100 on 3-1-88)
MOTBY-USATHAMA, Bayonne, NJ



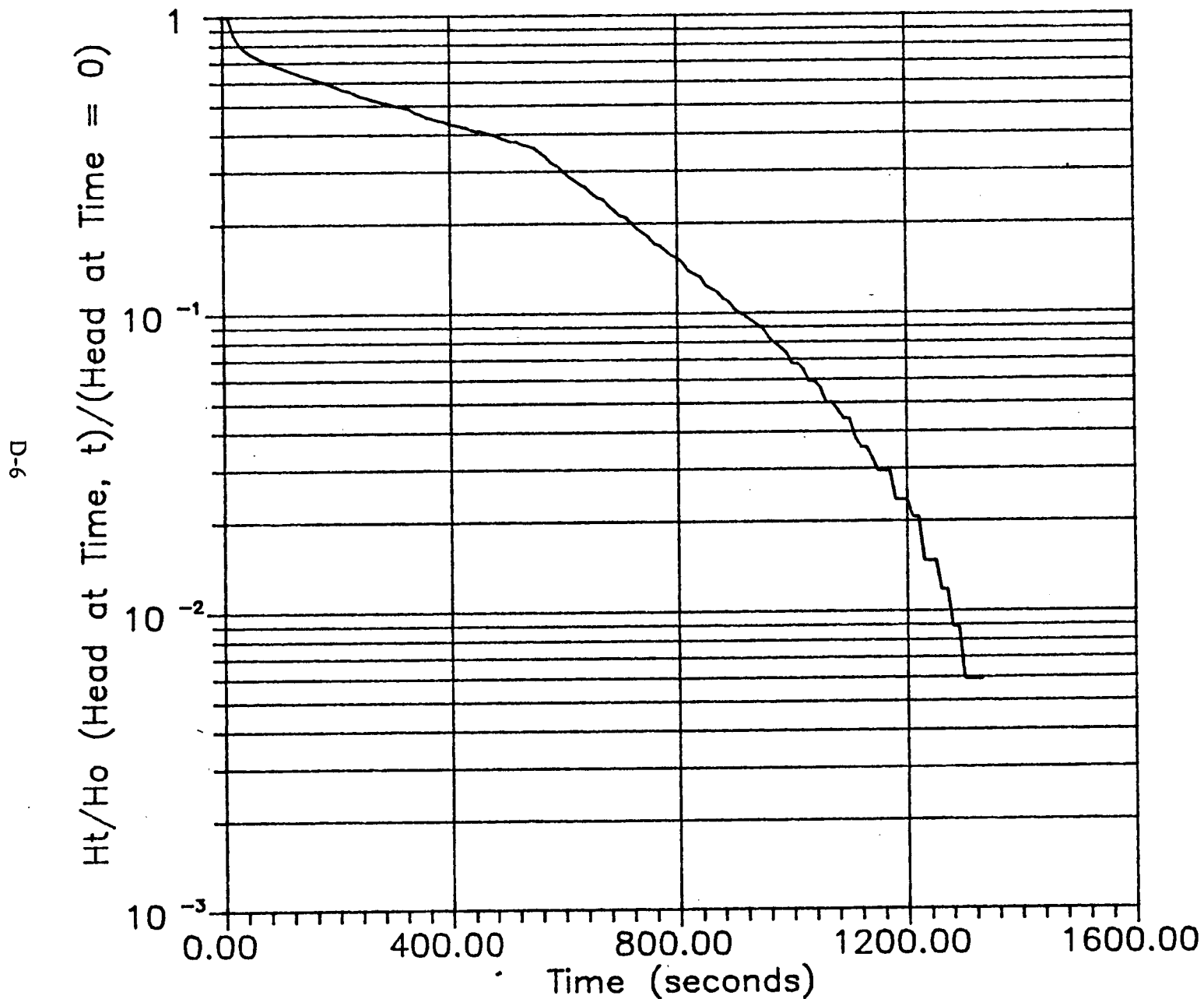
Tidal Fluctuations in Well DM-11
(as measured from 1715 on 2-25-88
through 1100 on 3-1-88)
MOTBY-USATHAMA, Bayonne, NJ



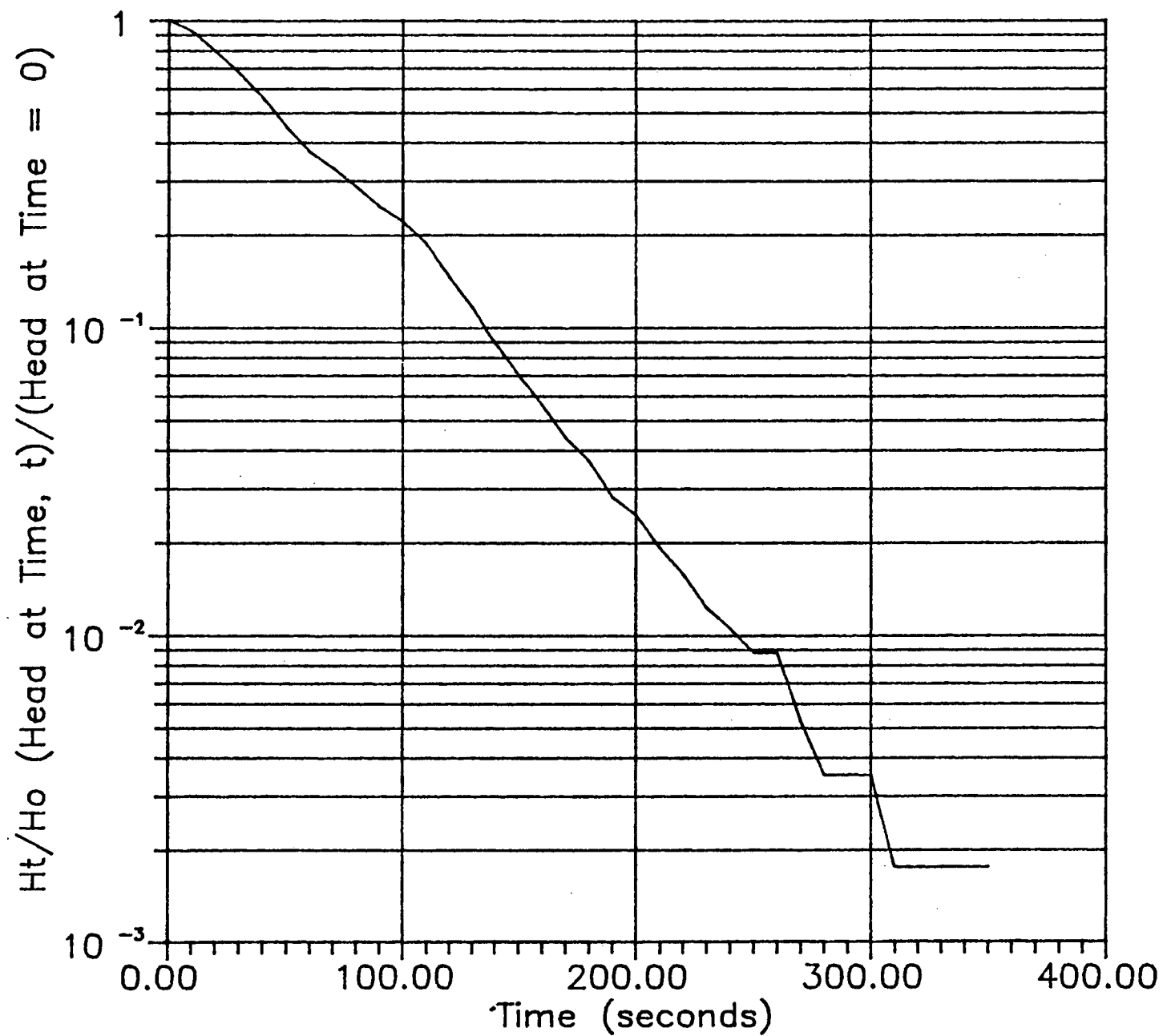
Plot of Rising Head Permeability Test Data Well DM-2
MOTBY-USATHAMA, Bayonne, NJ



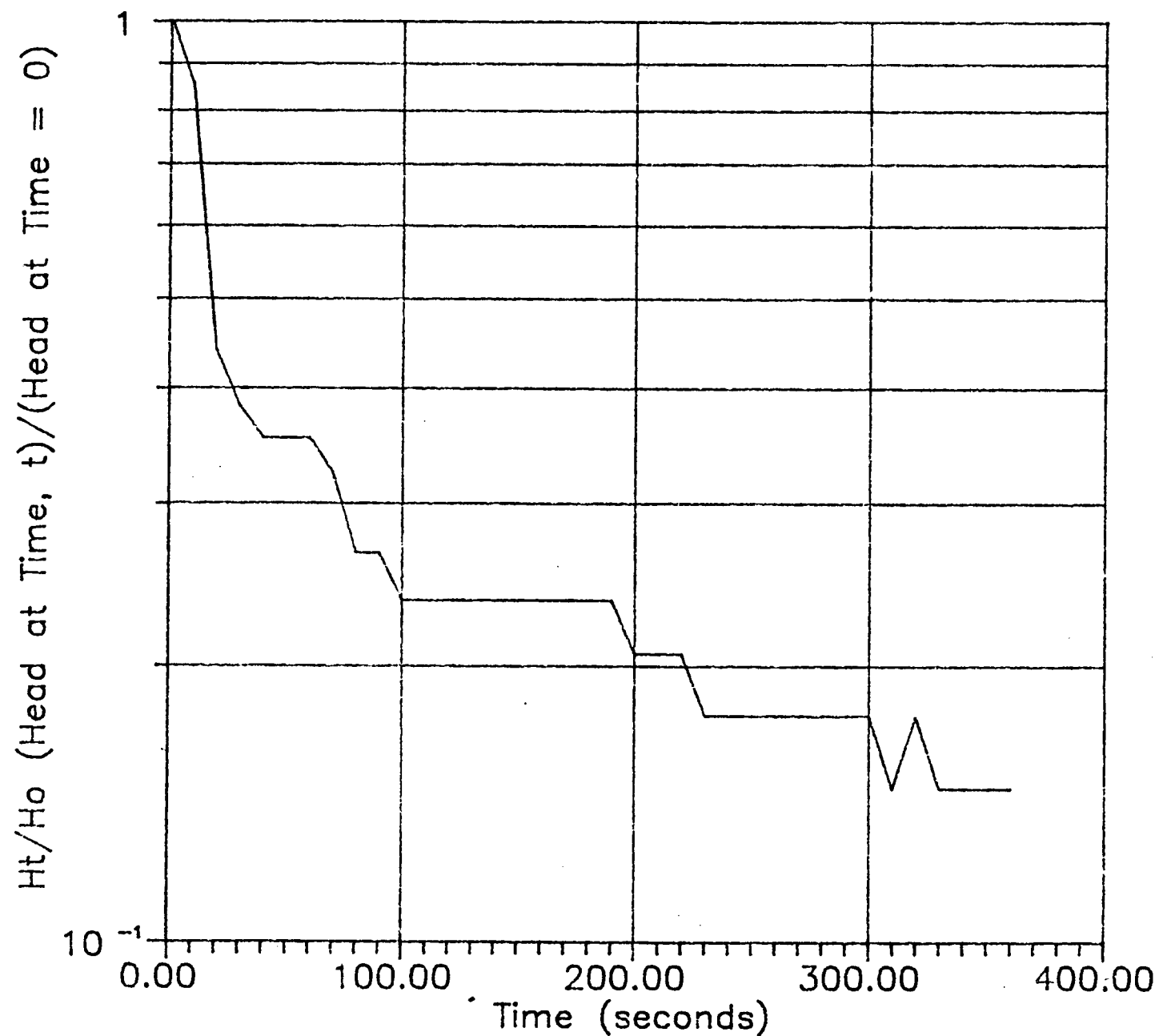
Plot of Rising Head Permeability Test Data Well DM-5
MOTBY-USATHAMA, Bayonne, NJ



Plot of Rising Head Permeability Test Data Well DM-6
MOTBY-USATHAMA, Bayonne, NJ



Plot of Rising Head Permeability Test Data Well DM-7
MOTBY-USATHAMA, Bayonne, NJ



	$R(\text{cm})$	$L(\text{cm})$	H_1	H_2	$\epsilon_1(\text{g})$	$\epsilon_2(\text{g})$	$K(\text{cm}^2/\text{sec})$
Dm-2 (D)	5.08	152.4	0.27	0.12	10	40	$7.8 \times 10^{-3} \text{ cm}^2/\text{sec}$
Dm-5(a)s	5.08	304.8	0.67	0.43	100	400	2.6×10^{-4}
Dm-5(b)s	5.08	304.8	0.23	0.15	680	800	6.2×10^{-4}
Dm-6 (s)	5.08	304.8	0.56	0.07	40	150	3.3×10^{-3}
Dm-7 (D)	5.08	152.4	0.85	0.38	10	30	1.2×10^{-2}

CALCULATIONS

$$\text{Dm-2 (D)} \quad \frac{25.8}{(2)(152.4)(40-10)} \ln\left(\frac{152.4}{5.08}\right) \ln\left(\frac{.27}{.12}\right) = \frac{(0.0028)(3.4)(0.81)}{(3.4)(0.81)} = 7.8 \times 10^{-3} \text{ cm}^2/\text{sec}$$

$$\text{Dm-5(a)} \quad \frac{25.8}{(2)(304.8)(400-100)} \ln\left(\frac{304.8}{5.08}\right) \ln\left(\frac{.67}{.43}\right) = \frac{(0.00142)(4.09)(.443)}{(4.09)(.443)} = 2.6 \times 10^{-4} \text{ cm}^2/\text{sec}$$

$$\text{Dm-5(b)} \quad \frac{25.8}{(2)(304.8)(800-680)} \ln\left(\frac{304.8}{5.08}\right) \ln\left(\frac{.23}{.15}\right) = \frac{(0.00035)(4.09)(.427)}{(4.09)(.427)} = 6.2 \times 10^{-4} \text{ cm}^2/\text{sec}$$

$$\text{Dm-6} \quad \frac{25.8}{(2)(304.8)(150-40)} \ln\left(\frac{304.8}{5.08}\right) \ln\left(\frac{.56}{.07}\right) = \frac{(0.00038)(4.09)(2.08)}{(4.09)(2.08)} = 3.3 \times 10^{-3} \text{ cm}^2/\text{sec}$$

$$\text{Dm-7 (D)} \quad \frac{25.8}{(2)(152.4)(30-10)} \ln\left(\frac{152.4}{5.08}\right) \ln\left(\frac{.85}{.38}\right) = \frac{(3.4)(3.4)(.81)}{(3.4)(.81)} = 1.2 \times 10^{-2} \text{ cm}^2/\text{sec}$$

APPENDIX E
Underground Storage Tank Inspection Report Forms

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: Behind Bldg. 44E Client: USATHAMATank/Container Designation: 3T7 - See Drawing 8/17/88 Field NotesType of Structure/Container: Gasoline Tank below inactive Gas pumpsMaterials of Construction: Concrete Sample Port Diam = 3" ^{steel} pipeSize, Shape, Depth to Bottom: Depth to Bottom = 8.63' Tank Diam. = 5.49 ft.Date of Installation: 1942, Abandoned 1980Date/Time of Inspection/Sampling: 8/17/88 12:15 - 12:40Type of Contents (solid, liquid, sludge, other): liquid - no sludge evidentDescription of Contents (including volume, clarity, color, odor, etc.):
strong gasoline odors, reddish-brown w/ some small pieces of
corroded metal, 2000 gallon suspected volumeSample Method: Peristaltic Pump w/ dedicated silicon tubingType of Sample: Pure product floating above 0.34' H₂ODepth to Contents: Grd. Surf. to liquid = 4.1 ft. Grd. Surf. to Top of tank = 3.14 ft.Layer Description: OEM Paste meas. = 0.34 ft H₂O on bottom w/
7.53 ft floating productpH: 5.3Conductivity: 0.03 = 3×10^{-2} mohm/cm²Temperature: 26.5 °CComments: HNU Readings = 143 ppm CGI (%LEL) = 17%
Used fluorescent paint - labeled tank # on adjacent pavement
Sampled for: Pb, Fingerprinting, Oil & SWInspected/Sampled by: David S. Woodward Date: 8/17/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.Rev. 1
2/10/88

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: behind bldg 44E Client: USATHAMATank/Container Designation: 3T9 - See Drawing 8/17/88 Field NotesType of Structure/Container: Concrete Gasoline Tank below inactive gasMaterials of Construction: Concrete Sample Port Diam = 3" ^{11" pump.}
_{steel pipe}Size, Shape, Depth to Bottom: Depth to Bottom = 8.7 ft. ^{Grd. Surf. to}
_{top of tank = 332 ft.}Date of Installation: 1942, Abandoned 1980Date/Time of Inspection/Sampling: 8/17/88 12:30-12:50Type of Contents (solid, liquid, sludge, other): liquid - no sludge evidentDescription of Contents (including volume, clarity, color, odor, etc.):
gasoline odors, DK. Brown to black, muddy water w/
obvious gas/oil and a black sticky varnish-like substance
2,000 gallon suspected volumeSample Method: Peristaltic Pump w/ dedicated silicon tubingType of Sample: liquid - pure product and black varnish-like substance very
sticky - both appear to be floatingDepth to Contents: Surf. to liquid = 8.06 ft. ^{Grd.} Tank Diameter = ~4.9 ft.Layer Description: OEM paste measured = unable to measure a floating
layer paste indicates all waterpH: 6.9Conductivity: 4,000 = 400 x 10 uMhosTemperature: 26.0Comments: HNU Reading = 29 ppm CGI (%LEL) = 0.0
Used Fluorescent paint - labeled tank # on adjacent pavement
Sampled for: pb, fingerprinting total petroleum hydrocarbonsInspected/Sampled by: David S. Woodward Date: 8/17/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.Rev. 1
2/10/88

Tank/Container* Inspection and
Sampling Record

Project Name: MOTBY Project No.: 06702-022
 Location: Behind Bldg. Client: USATHAMA

Tank/Container Designation: 3T10 - See drawing 8/17/88 Field Notes

Type of Structure/Container: Steel or Concrete - gasoline tank below inactive gas pump

Materials of Construction: Steel Manhole Cover Access Concrete w/ 3" Steel pipe Access port

Size, Shape, Depth to Bottom: Depth to Bottom = 8.68 ft. Tank Diam = unable to determine

Date of Installation: 1961, Abandoned 1980

Date/Time of Inspection/Sampling: 8/17/88 12:38-13:15

Type of Contents (solid, liquid, sludge, other): liquid - no sludge evident

Description of Contents (including volume, clarity, color, odor, etc.):
strong gasoline odors, light pink to clear gasoline no H₂O evident in the sample, 4,000 gallon suspected volume

Sample Method: Peristaltic Pump w/ dedicated silicon tubing

Type of Sample: Pure product floating above 0.68 ft. H₂O

Depth to Contents: Ord. Surf. to liquid = 7.38 ft. 6rd. Surf. to tank top = unable to determine

Layer Description: OEM paste measured 0.68 ft. H₂O w/ 0.68 ft. pure product above it.

pH: 6.7

Conductivity: 3750 = 375.0 x 10 uohms

Temperature: 25.3 °C

Comments: HNU reading = 200 ppm CGI (%LEL) = 13
Used fluorescent paint - labeled tank # on adjacent pavement
Sampled For: pb, fingerprinting

Inspected/Sampled by: David S. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

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Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: Near former bldg. 106 Client: USATHAMATank/Container Designation: 3T17Type of Structure/Container: Concrete - Abandoned gasoline tankMaterials of Construction: Concrete Sample Port Type/Diam = 2" steel pipeSize, Shape, Depth to Bottom: Depth to bottom = 7.63 ft. Tank Diam. = 4.43 ft.Date of Installation: 1942, Abandoned 1965Date/Time of Inspection/Sampling: 8/17/88 13:30-13:50Type of Contents (solid, liquid, sludge, other): liquid - H₂ODescription of Contents (including volume, clarity, color, odor, etc.):
No gasoline odor, lt brown color w/ oily sheenSample Method: peristaltic pump w/ dedicated silicon tubingType of Sample: liquid - appears to be oily waterDepth to Contents: Grd. Surf. to liquid = 7.38 ft. Grd. Surf. to tank top =
OEM paste indicates entire 0.25 ft. liquid level to be H₂OpH: 3.8Conductivity: 260 = 26.0 x 10 mohmsTemperature: 27.8 °CComments: HNU Reading = 0.0 ppm CGI (0% CEL) = 0
Used fluorescent paint - labeled tank # on adjacent concrete
Sampled for: VOC's-TCL, total petroleum hydrocarbonsInspected/Sampled by: David S. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

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2/10/88

No SAMPLE - DRY!

Seq. # _____

Tank/Container* Inspection and
Sampling Record

Project Name: MOTBY Project No.: 06702-022

Location: Near former Bld. 106 Client: USATHAMA

Tank/Container Designation: 3T16

Type of Structure/Container: Concrete - ^{abandoned} gasoline tank

Materials of Construction: Concrete w/ 2" I.D. Steel pipe Access port

Size, Shape, Depth to Bottom: Depth to Bottom = 7.54 ft. ^{Grd. Surf to} tank top = ^{unable to} determine

Date of Installation: 1942, Abandoned 1965

Date/Time of Inspection/Sampling: 8/17/88 13:25 - 13:30

Type of Contents (solid, liquid, sludge, other): Dry TANK - Empty!

Description of Contents (including volume, clarity, color, odor, etc.):

N/A

Sample Method: N/A

Type of Sample: None

Depth to Contents: N/A

Layer Description: N/A

pH: N/A

Conductivity: N/A

Temperature: N/A

Comments: HNU Reading = 0 ppm CBI (% CEL) = 0

Inspected/Sampled by: David S. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

Rev. 1
2/10/88

Dames & Moore

**Tank/Container* Inspection and
Sampling Record**

Project Name: MOTBY Project No.: 06702-022
 Location: Near former bld. 106 Client: USATHAMA

Tank/Container Designation: 3T18
 Type of Structure/Container: Diesel fuel tank, Abandoned - no pump remaining
 Materials of Construction: Concrete w/ 8" I.D steel pipe Access
 Size, Shape, Depth to Bottom: Depth to bottom = 7.43 ft. Tank Diam = ~56 ft.
 Date of Installation: 1942, Abandoned 1965
 Date/Time of Inspection/Sampling: 8/17/88 13:55 - 14:05
 Type of Contents (solid, liquid, sludge, other): liquid - no sludge evident
 Description of Contents (including volume, clarity, color, odor, etc.):
no gasoline odors, tank was open and full of H₂O w/
obvious oil/brown discoloration - pumped H₂O level down to
allow sampling from inside the tank
 Sample Method: Peristaltic pump w/ dedicated silicon tubing
 Type of Sample: H₂O from inside tank - full of H₂O / No product
 Depth to Contents: liquid = 0 (full of H₂O) End Surf. to tank top = 1.83 ft. floating
 Layer Description: OEM paste measured = indicates all H₂O w/
no floating product
 pH: 6.2

Conductivity: 260 = 26.0 x 10 uohms

Temperature: 30.8 °C

Comments: HNV Reading = 0.0 ppm CGI (% LEL) = 0
Used Fluorescent paint - labeled tank # on adjacent concrete
Sampled for: VOC's - TCL, Total Petroleum Hydrocarbons
Duct tape Access port shut at sampling completion

Inspected/Sampled by: David S. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

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Tank/Container* Inspection and
Sampling RecordProject Name: MOTBYProject No.: 06702-022Location: West Bldg. 44DClient: USATHAMRATank/Container Designation: 3T19Type of Structure/Container: Abandoned Waste Oil Tank w/ Pit inside Bld. 44D and pipes interconnecting the two (Pass. Grease TRAP)Materials of Construction: Steel w/ 2" steel Access portSize, Shape, Depth to Bottom: Depth to bottom =Date of Installation: 1946, Abandoned 1965Date/Time of Inspection/Sampling: 8/17/88 11:10-12:05

Type of Contents (solid, liquid, sludge, other): _____

Description of Contents (including volume, clarity, color, odor, etc.);
Strong oil & Grease odors, DK Black sticky sludge/liquid comp. Tank is fullSample Method: 1/2" I.D. PVC x 10' long used as a pipette to recover small amounts of sludge/liquid at a timeType of Sample: Combination liquid/sludgeDepth to Contents: Grd. Surf. to liquid = Grd. Surf. to top tank = Unable to determineLayer Description: Unable to determine layers - no H₂O evidentpH: N/AConductivity: N/ATemperature: N/AComments: HNU reading = 0.0ppm CGI (%LEL) = 0Used fluorescent paint - labeled tank # on adjacent asphalt. At sample completion - duct taped 2" Access port shut and used cold patch (Asphalt patch) to replace what we removed (covered Access)Sampled For: VOC's - TCL, BNA's/Pest./PCBS - TCL, Oil & Grease, Metals - As, Cr, Cd, Pb & ZnInspected/Sampled by: David S. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

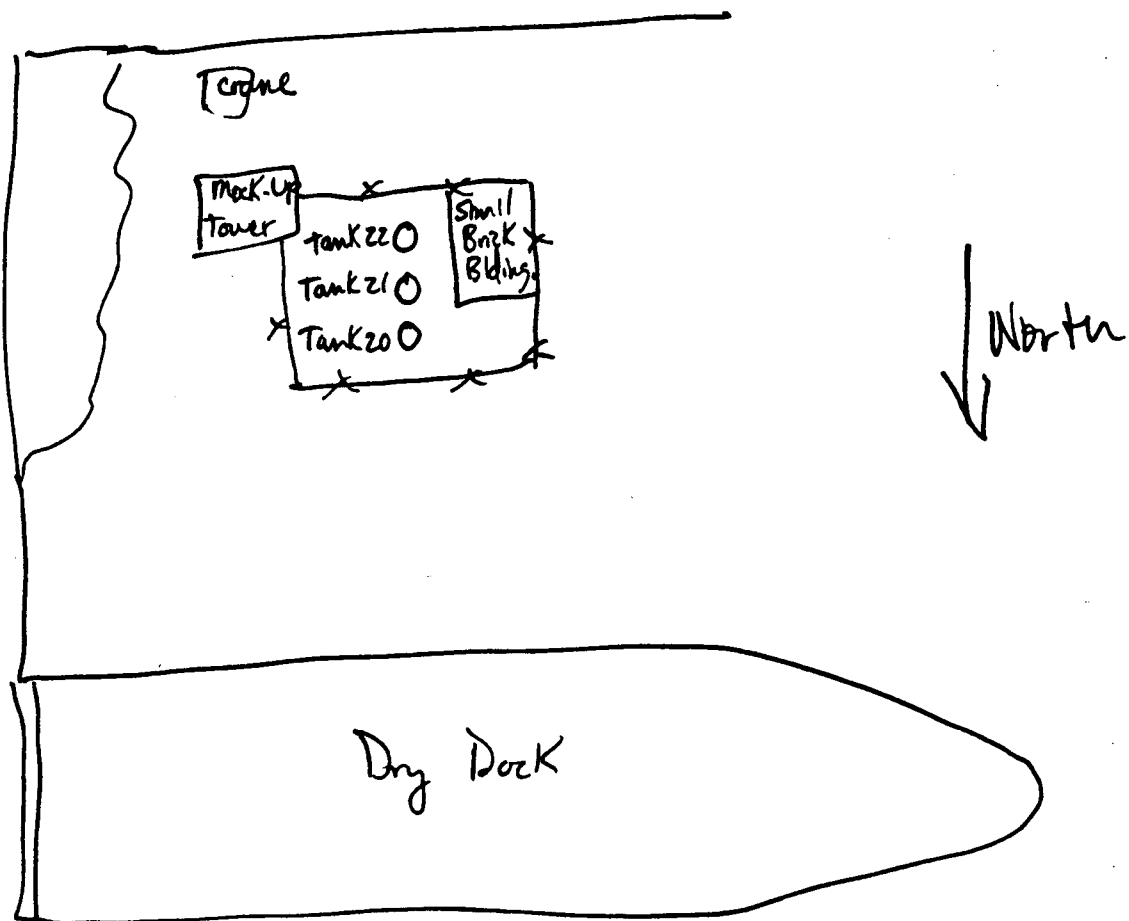
Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022-Location: Noar Mock-Up Air Craft Client: USATHAMA

(Northernmost Tank) Tower See Drawing on back

Tank/Container Designation: 3T20Type of Structure/Container: Steel gasoline tank - abandoned + left openMaterials of Construction: Steel w 4" steel pipe Access portSize, Shape, Depth to Bottom: Access Port Depth to bottom = End Tank Access Port to tank top =Date of Installation: 1946, Abandoned on unknown dateDate/Time of Inspection/Sampling: 8/18/88 9:33-10:00Type of Contents (solid, liquid, sludge, other): liquid - H₂O + Fuel Mixed (appears to be mixed)Description of Contents (including volume, clarity, color, odor, etc.):
strong diesel or Kerosene odors, lt brown oily liquidNote: Dead vegetation around dry well from rainwater causing overflowSample Method: Dedicated 2" I.D. PVC Bailor w/ no ropeType of Sample: Liquid Appears to be H₂O/Fuel MixtureDepth to Contents: Access Port to liquid = 0 / foll of from H₂O Access Port to top tank = unable to determine
DEM paste measurement - indicates all H₂O w/Layer Description: no layeringpH: 8.3Conductivity: 1240 = 124.0 x 10Temperature: 18.3 °CComments: HNU Reading = 12 ppm CGI (% LEC) = 0Use fluorescent paint & labeled tank # on steel dry wellSampled For: VOC's - TCL, BNA's/Pest./PCBT - TCL, Oil & Grease, Metals -
As, Cr, Cd, Pb + ZnNote: All above measurements were taken to top 4" Access port (ref.) which
is 1.1 ft. above grd. surfaceInspected/Sampled by: David S. Woodward Date: 8/18/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.Rev. 1
2/10/88

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: Near Wreck-Up Aircraft Client: USATHAMA
(Center tank) Tower (See Drawing back)Tank/Container Designation: 3TZ1Type of Structure/Container: Abandoned gasoline tank - left openMaterials of Construction: Steel w/ 4" steel pipe Access PortSize, Shape, Depth to Bottom: Depth to bottom = 8.93 ft. ^{from top Access Port} to tank top = 0.3 ft.Date of Installation: 1946, Abandoned at unknown timeDate/Time of Inspection/Sampling: 8/18/88 8:10 - 9:30Type of Contents (solid, liquid, sludge, other): liquid, no sludge evidentDescription of Contents (including volume, clarity, color, odor, etc.):
Strong diesel or Kerosene odors, oily lt. brown liquid,Sample Method: 1 1/4" dedicated PVC bailer w/ new ropeType of Sample: Liquid - Appeared to be fuel/H₂O mixtureDepth to Contents: Top Access Port to liquid surf. = 0.3 ft. (After I pumped dry well out so that ^{any insi.} came from tankLayer Description: GEM paste indicates all water w/ no layering / floating product evidentpH: 8.5Conductivity: 1990 = 199 x 10 uohmsTemperature: 17.8Comments: HNU reading = 7 ppm CGI (%LEL) 0
Used fluorescent paint - labeled tank # on side steel dry well
Sampled for: VOC's - TCL, BNA's/Pest./PCB's - TCL, Oil & Grease, Metals -
As, Cr, Cd, Pb & Zn.Note: All above meas. were taken to top 4" Access port (ref.) which
is 1.3 ft. below gnd surface.Inspected/Sampled by: David S. Woodward Date: 8/18/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.

Harbor



**Tank/Container* Inspection and
Sampling Record**

Project Name: MOTBY Project No.: 06702-022

Location: Near Mock-Up Aircraft client: USATHAMA
Tower - Southernmost Tank of the 3 (See Drawing Back)

Tank/Container Designation: 3TZZ

Type of Structure/Container: Steel gasoline tank, Abandon - left open

Materials of Construction: Steel w/ 4" steel pipe Access Port

Size, Shape, Depth to Bottom: Access Port to bottom = 8.93' Access Port to tank top = 0.93'

Date of Installation: 1946, Abandoned at unknown time

Date/Time of Inspection/Sampling: 8/18/88 8:45 - 9:15

Type of Contents (solid, liquid, sludge, other): liquid - no sludge evident

Description of Contents (including volume, clarity, color, odor, etc.):
Strong diesel or kerosene odors, pale straw-colored liquid -
fizzes when you pour it into a bottle

Sample Method: 1 1/4" dedicated PVC bailer

Type of Sample: liquid - Appears to be fuel/H₂O mixture

Depth to Contents: Access Port to liquid level = 2.6 ft.

Layer Description: OEM paste indicates all water w/ no layering/ floating product

pH: 7.8

Conductivity: 1620 = 162 x 10 uohms

Temperature: 19.3 °C

Comments: HNU Reading = 20 ppm CGI (% LEL) = 0.0
Used fluorescent paint - labeled tank # on side steel dry well
Sampled For: VOC's - TCL, BNA's/Pest./PCB's - TCL, Oil & Grease
Metals - Cr, Cd, As, Pb & Zn

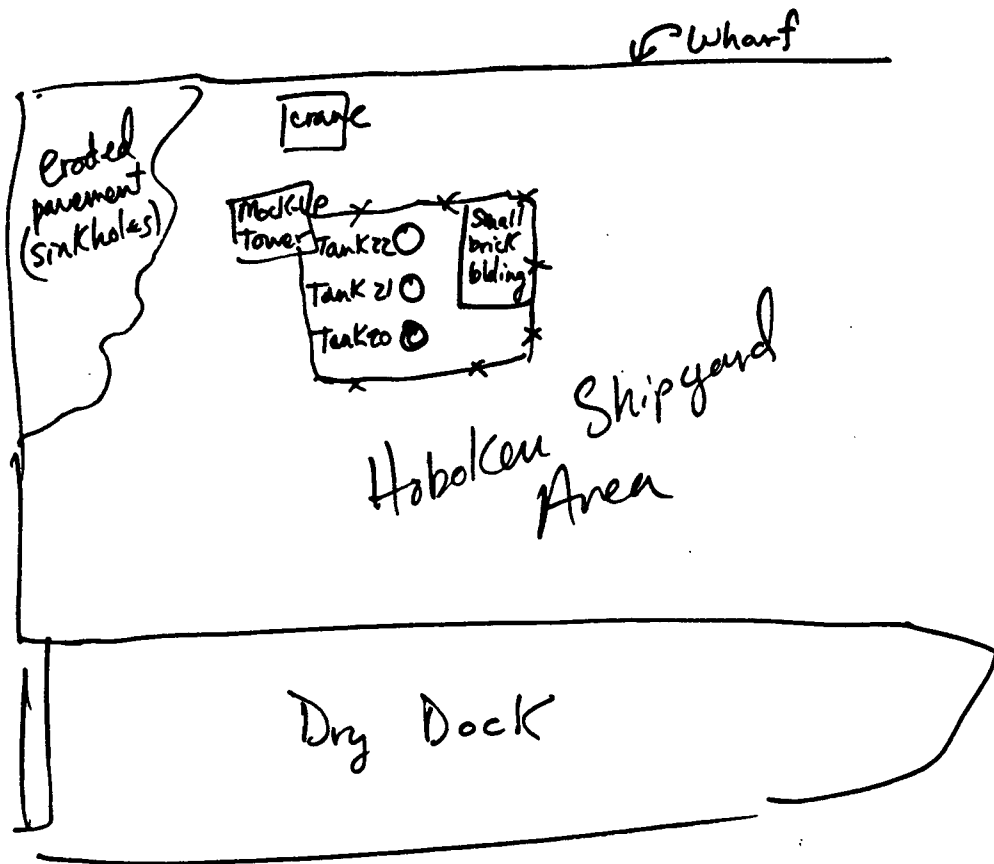
Note: All meas. above taken from top of Access port which is 1.3 ft. below ground surface

Inspected/Sampled by: David S. Woodward Date: 8/18/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

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2/10/88

Harbor



North
↓

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: MOTBY Exchange - Gas Station Client: USATHAMATank/Container Designation: 89 Octane Regular Gasoline - Pump #2Type of Structure/Container: Underground Storage Tank / GasolineMaterials of Construction: Unknown - N/ASize, Shape, Depth to Bottom: N/ADate of Installation: Unknown - N/ADate/Time of Inspection/Sampling: 8/17/88 15:12 - 15:20Type of Contents (solid, liquid, sludge, other): Pure product ^{89 octane} regular gasolineDescription of Contents (including volume, clarity, color, odor, etc.):
17. reddish pink, very strong gasoline odorsSample Method: Grab from nozzle on gas pumpType of Sample: Pure product - 89 octane regular gasolineDepth to Contents: N/ALayer Description: N/ApH: 5.6Conductivity: 0.0 uohmsTemperature: 28.7Comments: Sampled For: FingerprintingInspected/Sampled by: David S. Woodward Date: 8/17/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.Rev. 1
2/10/88

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: MOTBY Exchange-^{GAS} station Client: USATHAMATank/Container Designation: 87 Octane Unleaded GasolineType of Structure/Container: Underground Storage tank / Unleaded GasolineMaterials of Construction: Unknown - N/A.Size, Shape, Depth to Bottom: Unknown / N/ADate of Installation: Unknown - N/ADate/Time of Inspection/Sampling: 8/17/88 1515-1530Type of Contents (solid, liquid, sludge, other): Pure Product - 87 Octane Unleaded GasolineDescription of Contents (including volume, clarity, color, odor, etc.):
lt. reddish pink, very strong gasoline odorsSample Method: Grab from nozzle on gas pumpType of Sample: Pure Product - 87 Octane Unleaded GasolineDepth to Contents: N/ALayer Description: N/ApH: 5.3Conductivity: 0.05 mohm/cm²Temperature: 26.7°CComments: Sampled For: FingerprintingInspected/Sampled by: David S. Woodward Date: 8/17/88*Includes tanks, basins, cisterns, drums, and other similar containers
or structures.Rev. 1
2/10/88

Tank/Container* Inspection and
Sampling RecordProject Name: MOTBY Project No.: 06702-022Location: Garage of Bldg. 4 Client: USATHAMIATank/Container Designation: Diesel Fuel Truck # 6290Type of Structure/Container: Diesel Fuel Truck (steel tank mounted on single axle truck)Materials of Construction: SteelSize, Shape, Depth to Bottom: 4' deep x 5' wide x 10' long steel tankDate of Installation: N/ADate/Time of Inspection/Sampling: 8/17/88 16:50 - 17:05Type of Contents (solid, liquid, sludge, other): liquid - no sludge evidentDescription of Contents (including volume, clarity, color, odor, etc.):
Strong diesel fuel odors, reddish-brown liquid, tank was full at time of samplingSample Method: Bottle Immersion (Note: VOC's bottles were filled from new, decontaminated beaker because of pre-preservation)

Type of Sample: _____

Depth to Contents: Full TankLayer Description: N/ApH: 5.6Conductivity: 0.03 uhm/cm²Temperature: 31.3°CComments: Only Diesel used on site is taken from Railroad car at Bldg 53A loaded onto this truck and then distributed to various pieces of equipment trucks, etc... We were unable to obtain permission to access the railroad car - so we took sample from this truckInspected/Sampled by: David L. Woodward Date: 8/17/88

*Includes tanks, basins, cisterns, drums, and other similar containers or structures.

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